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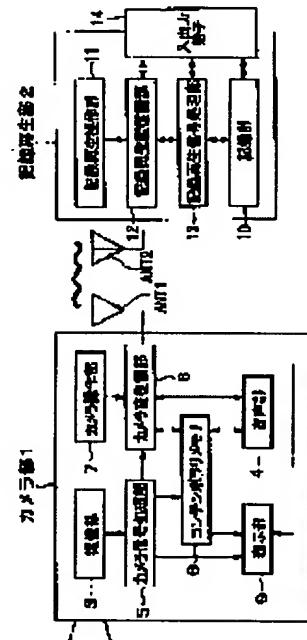
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(54) PHOTOGRAPHING RECORDING SYSTEM, PHOTOGRAPHING DEVICE AND RECORDING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a system where a video recorded in a recording device can be viewed on the side of a photographing device and a trouble is eliminated in mutual operations even if the photographing device and the recording device are detached.

SOLUTION: The system is provided with a photographing device 1 having an image pickup part 3 which converts a video obtained by image pickup into an electric signal and an encoding means 8 encoding a video signal obtained by the image pickup part 3 and radio-transmitting output encoded in the encoding means 8 to a recording device 2 and with the recording device 2 demodulating a signal which is radio-transmitted and recording it in a recording means 10. The recording device 2 is provided with a function reproducing the recorded signal and radio-transmitting it and a remote operation function by a received radio signal. The photographing device 1 is provided with a remote operation function by the radio signal against the recording device 2, a means 8 demodulating the received radio signal and a display means 4 displaying the video signal obtained from the demodulated radio signal.



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CLAIMS

[Claim(s)]

[Claim 1] The photography equipment which carries out the radio transmission of the output which has the image pick-up section which electrical-signal-izes the image picturized and acquired, and a coding means to encode the video signal which obtained in this image pick-up section, and was encoded with the coding means to a recording device. In a photography record system equipped with the recording device recovers the signal by which the radio transmission was carried out from photography equipment, and it was made to make record on a record means While equipping a recording device with the function which reproduces the recorded signal and carries out wireless transmission, and the remote-operation function by the receiving radio signal. The photography record system characterized by equipping photography equipment with the remote-operation function by the radio signal to a recording device, a means to restore to the radio signal which received, and a display means to display the video signal acquired from the radio signal to which it restored.

[Claim 2] In the photography equipment which transmits the output which has the image pick-up section which electrical-signal-izes the image picturized and acquired, and a coding means to encode the video signal which obtained in this image pick-up section, and was encoded with the coding means to a recording device in a radio signal. A selection means to choose the radio-signal disclosure / secret one for regulating utilization of the receiving radio signal to recording devices other than a specific recording device. Photography equipment characterized by having a strange recovery means to restore to the radio signal which modulated said coding output to the radio signal with said selected disclosure / secret information, transmitted, and received while being able to transmit and receive the radio signal.

[Claim 3] Photography equipment according to claim 2 which possesses a means to specify the recording device of the object which permits record of transmit data, and is characterized by considering as the configuration which multiplex-carries out a radio transmission to a recording device by making the recognition signal which specifies the permitted recording device into the coded data of a photography video signal.

[Claim 4] The photography equipment carry out carrying out as the configuration which chooses the output which carried out encryption processing of some [at least] transmit data, and the output which has not carried out encryption processing according to disclosure / secret selection of a radio signal, and is offered to transmission while establishing a means perform and output encryption processing to transmit data in photography equipment given in claim 2, or 3 any 1 terms as the description.

[Claim 5] It is photography equipment which is photography equipment which encodes the photography video signal photoed and acquired with photography equipment, and carries out a radio transmission to a recording apparatus, and is characterized by having a means to forbid a radio transmission when an unassigned channel does not exist, the detection means of the existence of the unassigned channel between a specific recording apparatus and photography equipment, and.

[Claim 6] The photography equipment which carries out [having a detection means are photography equipment which encodes the video signal which photoed and acquired with

photography equipment, and carries out a radio transmission to a recording device, and detect the magnitude of the band between a specific recording device and photography equipment which can be transmitted, and a means control the amount of coded data according to this magnitude of the band which can be transmitted that detected, and forbid a radio transmission when the band which can be transmitted is below a predetermined value, and] as the description.

[Claim 7] Photography equipment characterized by equipping claim 5, or 6 any 1 terms with the transmission situation to a specific recording device, or the display means of the conditions which can be transmitted in the photography equipment of a publication.

[Claim 8] It is photography equipment characterized by providing the contact connector for the optical (infrared radiation being included) communication link connector in which a recording device and connection are possible, or mechanical electric connection, forbidding actuation of the connector during a radio transmission in photography equipment given in claim 5 thru/or 7 any 1 terms, and having a means to forbid a radio transmission, during a connector joint.

[Claim 9] Photography equipment characterized by considering as the configuration which transmits the coded data stored temporarily for this internal-storage means to a specific recording device when an internal-storage means to store temporarily the coded data of a photography video signal is provided in photography equipment according to claim 8 and a radio transmission or a connector joint becomes possible.

[Claim 10] Photography equipment characterized by considering as the configuration which possesses a means to detect the camera station and bearing of the exposure axis of photography equipment, and to generate a camera station and direction information in claim 2 thru/or photography equipment given in 8 any 1 terms, and multiplex-carries out a radio transmission to a recording device by making this camera station and direction information into the coded data of a video signal.

[Claim 11] Photography equipment characterized by considering as the configuration which possesses the generation means of the identification information which specifies photography equipment in claim 2 thru/or photography equipment given in 10 any 1 terms, and multiplex-carries out a radio transmission to a recording device by making this identification information into the coded data of a photography video signal.

[Claim 12] In the photography equipment which carries out the radio transmission of the output which has the image pick-up section which electrical-signal-izes the image picturized and acquired, and a coding means to encode the video signal (and sound signal) which obtained in this image pick-up section, and was encoded with the coding means to a recording device The camera station and a direction information generation means to detect self location and bearing of the exposure axis, and to generate a camera station and direction information, A photography angle-type assignment means to specify a desired camera station and bearing of the exposure axis, and a means to receive the video signal in which other photography equipments carry out a radio transmission, The camera station and a direction information extract means to extract said camera station and direction information from two or more received data which can be decoded, The camera station specified with the photography angle-type assignment means among the camera station and direction information on each camera extracted with this camera station and direction information extract means, and a means to choose received data with this camera station and direction information similar to bearing of the exposure axis, Photography equipment characterized by considering as the configuration which established a means to direct to a recording device that the video signal of these selected received data should be received.

[Claim 13] Photography equipment characterized by considering as the configuration which possesses an assignment means to specify other photography equipments, and a means to receive the photography video signal in which other specified photography equipments carry out a radio transmission, and to act as intermediary, in photography equipment according to claim 9.

[Claim 14] Photography equipment characterized by to provide a means specify the photography angle-type assignment means or other photography equipments which encode a photography video signal and carry out a radio transmission to a recording device, and which are photography equipment and specify a desired camera station and bearing of the exposure axis, and the means

which carries out the radio transmission of the assignment information by the means concerned to a specific recording device.

[Claim 15] The photography equipment which carries out the radio transmission of the output which has the image pick-up section which electrical-signal-izes the image picturized and acquired, and a coding means to encode the video signal which obtained in this image pick-up section, and was encoded with the coding means to a recording device, In a photography record system equipped with two or more recording devices recover the signal by which the radio transmission was carried out from photography equipment, and it was made to make record on a record means While equipping each recording device with the function which reproduces the recorded signal and carries out wireless transmission, and the function by the receiving radio signal operated by remote control The function which carries out remote indication of the various operator guidance which includes playback directions to a specific recording device to photography equipment by the radio signal, The photography record system characterized by having a means to receive the regenerative signal of said recorded signal in which a specific recording device carries out wireless transmission with this remote indication, and to get over, and a display means to display the video signal acquired from the radio signal to which it restored.

[Claim 16] The recording apparatus which is image recording equipment which receives the coded data of the photography video signal by which the radio transmission was carried out, and is recorded on a record medium, and is characterized by providing disclosure / secret distinction means of received data, a means to choose at least one from two or more exhibited received data, and a means to record the selected received data.

[Claim 17] A means to detect whether it is image recording equipment which receives the coded data of the video signal by which the radio transmission was carried out, and is recorded on a record medium, and some [at least] coded data are enciphered, The recording device characterized by providing the detection means of decryption propriety, a decryption means to decode the enciphered data, a means to choose a desired thing when there are two or more decipherable received data, and a means to record the selected received data.

[Claim 18] Are a recording apparatus claim 16 or given in 17 any 1 terms, and a video signal including a camera station and direction information is set to a receivable recording apparatus by two or more channels. A photography angle-type assignment means to specify a desired camera station and bearing of the exposure axis, and the camera station and the direction information extract means of extracting said camera station and direction information from two or more input signals which can be decoded, The recording device characterized by providing the specified camera station and a means to choose the input signal with this camera station and direction information similar to bearing of the exposure axis which can be decoded.

[Claim 19] The recording device characterized by providing an assignment means to specify specific photography equipment, and a means to receive the video signal in which the specified photography equipment carries out a radio transmission, and to act as intermediary, in a recording device claim 16 or given in 17 any 1 terms.

[Claim 20] The recording device characterized by providing a means to extract the control information for the various operator command in which specific photography equipment carries out a radio transmission in a recording device claim 16 thru/or given in 19 any 1 terms, and a means to receive the coded data in which desired photography equipment carries out a radio transmission according to this control information.

[Claim 21] The recording device which possesses a means extract the control information for the various operator command in which specific photography equipment carries out a radio transmission in a recording device claim 16 thru/or given in 19 any 1 terms, a playback means reproduce the memorized video signal according to this control information, and the means that carry out the radio transmission of the reproduced video signal, and is characterized by to consider as the configuration which reproduces and carries out the radio transmission of the memorized video signal according to control information.

[Claim 22] In a recording device claim 16 thru/or given in 20 any 1 terms to a recording device Establish a memory means and it enables it to store temporarily at least one received data. If

assignment changed from the image channel of a certain photography equipment to the image channel of other photography equipments is carried out when changing the image from each two or more photography equipments to arbitration and presenting an image transcription Storage initiation of the received data of the image of the newly changed channel is carried out at a memory means. The recording device characterized by considering as the configuration which starts read-out of the received data memorized for the memory means, and enables record from a predetermined location after record termination of the predetermined unit of the received data of the channel before a change.

[Translation done.]

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DETAILED DESCRIPTION**[Detailed Description of the Invention]****[0001]**

[Field of the Invention] Especially this invention relates to the photography record system, the image pick-up equipment, and the recording device which enabled it to perform signal transfer between this camera section—record playback section formed into another object by the radio transmission while forming the camera section and the record playback section into another object with respect to a video camera and a video-signal record regenerative apparatus (videocassette recorder).

[0002]

[Description of the Prior Art] The camera one apparatus video tape recorder represented by the 8mm video camera etc. has spread widely by having formed small lightweight. However, since cannot say that small lightweight was formed how much since the camera device section (in this case, image pick-up section), the record playback section, and a power supply section were unified, sufficient lightweight-ization will not necessarily progress, a long time will moreover be covered, a camera will be established in the conventional video camera and a photograph will be taken, the burden to a hand or an arm is large for a user. Moreover, there are problems, such as a dc-battery power source related to the power consumption of the whole equipment or the storage capacity of a record medium and troublesomeness of exchange of a record medium, and a limit that only the image which the user itself photoed is recordable.

[0003] Then, the attempt referred to as forming photography equipment and a recording device into another object has accomplished. When an example is given, it is the technique of **** currently indicated by JP,9-116797,A, JP,9-205571,A, and JP,9-238296,A, for example, and is the design used as the system of **** which separates a camera device part and the record playback section, and shows a video signal and a sound signal to a cable or drawing 15 which carries out a radio transmission.

[0004] And the way of the long duration record by the burden dissolution to the user by the formation of small lightweight of a camera part, low-power-izing, and limit relaxation of the equipment size of the record playback section came to be cultivated by these proposal techniques.

[0005]

[Problem(s) to be Solved by the Invention] However, user-friendliness worsens further in respect of actuation that it is mutual when neither check of the recorded image nor admiration can be carried out by the photography equipment side only by transmitting on radio the image which used photography equipment and a recording device as another object, connected by the wireless circuit between both, and image pick-up equipment picturized to a recording device, and making it record but photography equipment and a recording device are detached distantly.

[0006] Moreover, for example, although many video cameras, a surveillance camera, etc. exist in the various halls at the time of event holding, such as a street and an athletic meet, the image and voice which a user can record are restricted to a thing from a user's own camera.

[0007] therefore -- for example, also although it is called the best point which reservation of the photography point in the hall and migration of a location hung around continuously, and secured

the photography scene in an athletic meet with much trouble even if it considered one, if it becomes track events etc., it will be only the best point in a mere instant. for example, supposing the start point and the gall point are distantly separated, it is photography point **** at a gall point -- people are difficult for photography of the participant near the start point, and the person who chose the photography point as the start point is the condition which said that photography of the participant near the gall point was difficult.

[0008] since the technique shown in drawing 15 makes it possible to transmit the image from the camera section to the distant record playback section -- the same object -- with, the technique gather in the hall, and accommodates mutually each image of the video camera of a large number which are taking a photograph on the various points, and it enables it to use effectively and easily needs to be developed.

[0009] The place made into the object of this invention so, to the 1st In the photography equipment and the recording device of a method which it transmits [recording device] to a recording device on radio, and make the image which used photography equipment and a recording device as another object, connected by the wireless circuit between both, and image pick-up equipment picturized record on it Check the image recorded on the recording device by the photography equipment side, or it enables it to admire it. Moreover, it sets to the photography equipment and the recording device which are to offer the system it is made convenient [a system] in respect of mutual actuation even when photography equipment and a recording device are separated, and carry out the radio transmission of the signal between the camera section and the record playback section to the 2nd. It is in offering the photography equipment and the recording device which enabled it to use the image from another camera which exists around a user, and voice.

[0010]

[Means for Solving the Problem] In order to attain the above-mentioned object, this invention is constituted as follows. Namely, (1) The image pick-up section which electrical-signal-izes the image which picturizes the 1st invention and is acquired, The photography equipment which carries out the radio transmission of the output which has a coding means to encode the video signal (and sound signal) acquired in this image pick-up section, and was encoded with the coding means to a recording device, In a photography record system equipped with the recording device recovers the signal by which the radio transmission was carried out from photography equipment, and it was made to make record on a record means While equipping a recording device with the function which reproduces the recorded signal and carries out wireless transmission, and the remote-operation function by the receiving radio signal It considers as the configuration which equips photography equipment with the remote-operation function by the radio signal to a recording device, a means to restore to the radio signal which received, and a display means to display the video signal acquired from the radio signal to which it restored.

[0011] Thus, use photography equipment and a recording device as another object, and the merit of the formation of small lightweight of the photography equipment by having connected by the wireless circuit and having formed both into another object between both, is securable, and also remote operation is made possible. It becomes possible to carry out the monitor of the image which canceled the disadvantage by another object configuration as could operate the recording device free even if it was far away, and was recorded on the recording device by the photography equipment side, or to admire it, and the disadvantage by photography equipment and a recording device being separated can also be canceled now.

[0012] (2) The image pick-up section which electrical-signal-izes the image which picturizes the 2nd invention and is acquired, In the photography equipment which carries out the radio transmission of the output which has a coding means to encode the video signal (and sound signal) acquired in this image pick-up section, and was encoded with the coding means to a recording device A selection means to choose the radio-signal disclosure / secret one for regulating utilization of the receiving radio signal to recording devices other than a specific recording device, While being able to transmit and receive a radio signal, it has a strange recovery means to restore to the radio signal which modulated said coding output to the radio signal with said selected disclosure / secret information, transmitted, and received. According to

such a configuration, disclosure/secret one of the radio signal which self transmits can be chosen to recording devices other than the specific recording device located around a radio-transmission location, in being disclosure, it makes it possible to present admiration and record with reception with many and unspecified recording devices of the radio signal which self transmits, and its content of a transmission signal, and this changes into a prohibition condition at the time of secret. Therefore, according to this invention, when there are two or more cameras, the image photoed not only with the image of a self camera but with other cameras is accommodated mutually, and the technique of the photography system which can be effectively used now can be built.

[0013] (3) The 3rd this invention possesses a means to specify the recording device of the object which permits record of transmit data in the photography equipment of the above-mentioned (2) term, and is characterized by considering as the configuration which multiplex-carries out a radio transmission to a recording device by making the recognition signal which specifies the permitted recording device into the coded data of a video signal (and sound signal). Disclosure/secret one of the radio signal which self transmits can be chosen to two or more recording devices which are specified other than the specific recording device located around a radio-transmission location according to such a configuration, in being disclosure, it makes it possible to present admiration and record with reception with the recording device of a majority of specific radio signals which self transmits, and its content of a transmission signal, and this changes into a prohibition condition at the time of secret. Therefore, according to this invention, when there are two or more cameras, the image photoed not only with the image of a self camera but with other cameras is accommodated mutually, and the technique of the photography system which can be effectively used now can be built.

[0014] (4) In the photography equipment of the above-mentioned (2) term or (3) terms, while the 4th this invention establishes a means perform and output encryption processing to transmit data, it carries out as the configuration which chooses the output which carried out encryption processing of some [at least] transmit data, and the output which has not carried out encryption processing according to disclosure / secret selection of a radio signal, and is offered to transmission. A means perform and output encryption processing to transmit data in such a configuration establishes, a means choose the output of this encryption processing output means and the output which has not carried out encryption processing prepares, the output of an encryption processing output means chooses, this transmits at a radio signal, the output have not carried out encryption processing chooses and this transmits at a radio signal at the time of disclosure at the time of secret [of a radio signal]. And a video signal and a sound signal can be delivered now only to a specific record regenerative apparatus by forming an encryption decode processing means in a specific recording device, and performing decode processing through this encryption decode processing means at the time of reception of the enciphered radio signal.

[0015] (5) The 5th this invention encodes the video signal (and sound signal) photoed and acquired with photography equipment, it is photography equipment which carries out a radio transmission to a recording device, and the detection means of the existence of the unassigned channel between a specific recording device (or specific repeater) and photography equipment, and when an unassigned channel does not exist, it considers it as the configuration of photography equipment including a means to forbid a radio transmission.

[0016] In carrying out a radio transmission, a detection means investigates a current electric-wave operating condition, chooses an unassigned channel, and is made to communicate using the selector channel. Moreover, a radio transmission is forbidden when an unassigned channel does not exist. If it does in this way, congestion is avoided and it comes to be able to perform a smooth communication link.

[0017] (6) The 6th this invention is photography equipment which encodes the video signal (and sound signal) photoed and acquired with photography equipment, and carries out a radio transmission to a recording device, and is a specific recording device (). Or it considers as the configuration of photography equipment including a specific repeater, a detection means to detect the magnitude of the band between photography equipment which can be transmitted, and a means to forbid a radio transmission when the amount of coded data is controlled

according to this detected magnitude of the band which can be transmitted and the band which can be transmitted is below a predetermined value. If it is made such a configuration, to the capacity response of the usable band of the channel used for a communication link which can be transmitted Since data transmission can be carried out at the highest transmission rate which can control and transmit the amount of data and is permitted, and also a radio transmission is forbidden when the capacity of the band which can be transmitted is below a predetermined value Transmission at a too low transmission rate can be avoided, can avoid inefficient transmission, and serves as a system in which an always efficient communication link is possible in transmission.

[0018] (7) Consider the 7th this invention as the configuration possessing the transmission situation to a specific recording device, or the display means of the conditions which can be transmitted in the photography equipment of the above-mentioned (5) term or (6) terms. In this case, since the display information on a display means shows the transmission situation and the conditions which can be transmitted to a specific recording device, operability becomes good.

[0019] (8) The 8th this invention possesses the contact connector for the optical (infrared radiation is included) communication link connector in which a recording device and connection are possible, or mechanical electric connection in the photography equipment of the above-mentioned (5) term thru/or (7) terms, forbid actuation of the connector during a radio transmission, and consider as a configuration including a means to forbid a radio transmission, during a connector joint. Since actuation of the connector is forbidden during a radio transmission by this in a configuration of providing the contact connector and the optical-communication connector and a radio transmission is forbidden during a connector joint, the operation mistake and malfunction of being as ordering it the communication link which used the connector for having not carried out a connector joint **** [, and] can be controlled. [carrying out not the communication link that used the connector during the connector joint but a radio transmission]

[0020] (9) In the photography equipment of the above-mentioned (8) term, when an internal-storage means to store temporarily the coded data of a video signal (and sound signal) is provided and a radio transmission or a connector joint becomes possible, consider the 9th this invention as the configuration which transmits the coded data stored temporarily for this internal-storage means to a specific recording device. In this case, in the phase in which preparation of transmission was completed, promptly, since the transmission initiation of the data for transmission can be carried out, the efficient transmission processing without a time loss is attained.

[0021] (10) Consider the 10th this invention as the configuration which possesses a means to detect the camera station and bearing of the exposure axis of photography equipment, and to generate a camera station and direction information, and multiplex-carries out a radio transmission to a recording device by making this camera station and direction information into the coded data of a video signal (and sound signal) in the photography equipment of the above-mentioned (2) term thru/or (8) terms. Consequently, since the camera station and direction of photography equipment which have transmitted the video signal are known, when using them suitably in response to a video signal from much photography equipments, it comes to be able to perform utilization suitable for the object, and user-friendliness becomes good.

[0022] (11) Consider the 11th this invention as the configuration which possesses the generation means of the identification information which specifies photography equipment, and multiplex-carries out a radio transmission to a recording device by making this identification information into the coded data of a photography video signal (and sound signal) in the photography equipment of the above-mentioned (2) term thru/or (10) terms. Since the radio signal from specific photography equipment can be recognized by the receiving side by carrying out the radio transmission of the information including Camera ID (identification information) Send ID of the photography equipment which should be made to record and it is made to make it hold to a recording device side. In this condition The image of target image pick-up equipment can be made to record on a recording device, when picturizing with the image pick-up equipment of an a large number base if it is made to make the video signal and sound signal which are acquired

from the radio signal from image pick-up equipment with held ID information record, without losing a chance.

[0023] (12) The image pick-up section which electrical-signal-izes the image which picturizes the 12th this invention and is acquired, In the photography equipment which carries out the radio transmission of the output which has a coding means to encode the video signal (and sound signal) acquired in this image pick-up section, and was encoded with the coding means to a recording device The camera station and a direction information generation means to detect self location and bearing of the exposure axis, and to generate a camera station and direction information, A photography angle-type assignment means to specify a desired camera station and bearing of the exposure axis, and a means to receive the video signal (and sound signal) in which other photography equipments carry out a radio transmission, The camera station and a direction information extract means to extract said camera station and direction information from two or more received data which can be decoded, The camera station specified with the photography angle-type assignment means among the camera station and direction information on each camera extracted with this camera station and direction information extract means, and a means to choose the received data with this camera station and direction information similar to bearing of the exposure axis which can be decoded, It considers as the configuration which established a means to direct to a recording device that the video signal (and sound signal) of these selected received data should be received. This system uses photography equipment and a recording device as another object, and the merit of the formation of small lightweight of the photography equipment by having connected by the wireless circuit and having formed both into another object between both, can be secured. Moreover, with each photography equipment, it has a camera station and a direction information generation means, self location and bearing of the exposure axis are detected, and a camera station and direction information are generated. And wireless transmission of the camera station information and bearing of the exposure axis which were generated is carried out with a video signal and a sound signal. When there is a photography angle-type assignment means in photography equipment and this specifies a desired camera station and bearing of the exposure axis, a selection means A camera station and a direction information extract means extract said camera station and direction information from the input signal from two or more photography equipment among the video signals and sound signals in which other photography equipments carry out a radio transmission which can be decoded. The input signal from the camera station specified with the photography angle-type assignment means among the camera station and direction information on each of that extracted camera and photography equipment with this camera station and direction information similar to bearing of the exposure axis is chosen. Thus, if a desired camera station and bearing of the exposure axis specify with a photography angle-type assignment means, the video signal and the sound signal of a radio signal with this camera station and direction information similar to the camera station which specified with a photography angle-type assignment means among the camera station and the direction information on each photography equipment, and bearing of the exposure axis choose using said camera station and direction information which extracted from the radio signal in which the decode of the radio signals from other photography equipments which a camera station and a direction information extract means extracted is possible. And photography equipment directs the video signal (and sound signal) of this selected radio signal to make it record on a recording device. By this, if a desired camera station and bearing of the exposure axis are specified with a photography angle-type assignment means, a video signal and a sound signal with this camera station and direction information similar to a target camera station and bearing of the exposure axis can be chosen, and record can be presented. By making a video signal with this camera station and direction information that is similar to a target camera station and bearing of the exposure axis when the image of each photography equipment can be used, and a sound signal record on a recording device by the case where it is dotted with the photography equipment of an a large number base The image corresponding to the story which chose the image suitable for the object and the user considers is adopted easily, and can be recorded now on videotape.

[0024] (13) Consider the 13th this invention as the configuration possessing an assignment

means to specify other photography equipments, and a means to receive the video signal in which other specified photography equipments carry out a radio transmission, and to act as intermediary, in the photography equipment of the above-mentioned (9) term. The radio transmission of the radio signal which received from the photography equipment concerned corresponding to assignment information according to the assignment information on an assignment means with a user's photography equipment will be relayed and carried out to a record regenerative apparatus by this. A record regenerative apparatus will receive the radio signal from the photography equipment which is chosen as the above-mentioned assignment information response, and is sent, will get over, will record, and can record now the image which photoed the image and voice of the attention photographic subject which moves from the location for which it was suitable as much as possible.

[0025] (14) The 14th this invention encodes a video signal (and sound signal), is photography equipment which carries out a radio transmission to a recording device, and considers it as the configuration of the photography equipment possessing a means to specify the photography angle-type assignment means or other photography equipments which specify a desired camera station and bearing of the exposure axis, and the means which carries out the radio transmission of the assignment information to a specific recording device. The radio transmission of the radio signal which received from the photography equipment concerned corresponding to assignment information according to the assignment information on a photography angle-type assignment means with photography equipment will be carried out to a recording device by this. A recording device receives the radio signal from the photography equipment which is chosen as the above-mentioned assignment information response, and is sent, and gets over. Will record, arrange two or more cameras to the object response even cases [stationary photography of a photographic subject in the various exhibitions on the stage etc.], and a camera by carrying out selection assignment to the object response It can record now as an image with change, such as camera angle and voice level.

[0026] (15) The image pick-up section which electrical-signal-izes the image which picturizes the 15th this invention and is acquired, The photography equipment which carries out the radio transmission of the output which has a coding means to encode the video signal (and sound signal) acquired in this image pick-up section, and was encoded with the coding means to a recording device, In a photography record system equipped with two or more recording devices recover the signal by which the radio transmission was carried out from photography equipment, and it was made to make record on a record means While equipping each recording device with the function which reproduces the recorded signal and carries out wireless transmission, and the function by the receiving radio signal operated by remote control The function which carries out remote indication of the various operator guidance which includes playback directions to a specific recording device to photography equipment by the radio signal, It considers as a configuration equipped with a means to receive the regenerative signal of said recorded signal in which a specific recording device carries out wireless transmission with this remote indication, and to get over, and a display means to display the video signal acquired from the radio signal to which it restored. Although this system is another object, a recording device and photography equipment If it can operate by remote control from photography equipment to a recording device and remote indication performs playback ***** from photography equipment to a specific recording device The specific recording device carries out playback actuation, and reproduces the signal currently recorded on the specific recording device, and since wireless transmission is carried out With photography equipment, the record image of the directed recording device can be seen by the photography equipment side by receiving this signal by which wireless transmission was carried out, getting over, and displaying the video signal acquired on a display means. Therefore, it becomes a user-friendly system.

[0027] (16) The 16th this invention receives the coded data of the photography video signal by which the radio transmission was carried out, is a recording apparatus recorded on a record medium, and considers it as the configuration of the recording apparatus possessing disclosure / secret distinction means of received data, a means to choose at least one from two or more exhibited received data, and a means to record the selected received data. If it has set

disclosure/secret one as the radio-transmission signal which photography equipment transmits to two or more recording devices other than the specific recording device located around a radio-transmission location according to such a configuration, it will become possible for a recording device to incorporate received data from the setting-out information in disclosure, and to record, but even when there are two or more radio signals which have the setting-out information on open, it chooses and received data can record. Therefore, according to this invention, when there are two or more photography equipments, the image photoed with the desired photography equipment of the inside where the transmitted data are exhibited can be recorded now, and the image in alignment with the target scenario can be recorded.

[0028] (17) A means to detect whether the 17th this invention is a recording apparatus which receives the coded data of the video signal by which the radio transmission was carried out, and is recorded on a record medium, and some [at least] coded data are enciphered, It considers as the configuration of the recording device possessing the detection means of decryption propriety, a decryption means to decode the enciphered data, a means to choose a desired thing when there are two or more decipherable received data, and a means to record the selected received data. According to this invention, a decipherable thing can be chosen and recorded about the data transmitted as enciphered data.

[0029] (18) The 18th this invention is a recording apparatus the above-mentioned (16) term or given in (17) terms, and set a video signal (and sound signal) including a camera station and direction information to a receivable recording apparatus by two or more channels. A photography angle-type assignment means to specify a desired camera station and bearing of the exposure axis, and the camera station and the direction information extract means of extracting said camera station and direction information from two or more input signals which can be decoded, It considers as the configuration possessing the specified camera station and a means to choose the input signal with this camera station and direction information similar to bearing of the exposure axis which can be decoded. When the radio transmission of the photography video signal (and sound signal) which includes a camera station and bearing-of-the-exposure-axis information from two or more photography equipments, respectively is carried out to a recording device in such a configuration If a desired camera station and bearing of the exposure axis are specified with a photography angle-type assignment means A camera station and a direction information extract means extract said camera station and direction information from the video signal by which a radio transmission is carried out, and a sound signal. A selection means The input signal from the camera station specified with the photography angle-type assignment means among the camera station and direction information on each of that extracted photography equipment and photography equipment with this camera station and direction information similar to bearing of the exposure axis is chosen. And the video signal (and sound signal) of this selected radio signal is recorded. By thus, the thing for which a desired camera station and bearing of the exposure axis are specified with a photography angle-type assignment means By the case where can choose a video signal and a sound signal with this camera station and direction information similar to a target camera station and bearing of the exposure axis, can present record now, and it is dotted with much photography equipments of a base When the image of each photography equipment can be used, a video signal with this camera station and direction information similar to a target camera station and bearing of the exposure axis, and a sound signal by making it record on a recording device The image corresponding to the story which chose the image suitable for the object and the user considers is adopted easily, and can be recorded now on videotape.

[0030] (19) Consider the 19th this invention as the configuration possessing an assignment means to specify specific photography equipment, and a means to receive the photography video signal in which the specified photography equipment carries out a radio transmission, and to act as intermediary, in a recording device the above-mentioned (16) term or given in (17) terms. Thereby, in a recording device side, even if it would receive the radio signal which received from the photography equipment concerned corresponding to assignment information according to the assignment information on an assignment means, it will act as intermediary for a radio transmission and specific photography equipment is separated, the radio signal to output can be

relayed and it can send far away.

[0031] (20) Consider the 20th this invention as the configuration possessing a means to extract the control information for the various operator command in which specific photography equipment carries out a radio transmission, and a means to receive the coded data in which desired photography equipment carries out a radio transmission according to this control information, in a recording device the above-mentioned (16) term thru/or given in (19) terms. An extract means extracts the control information for the various operator command sent by the radio signal, for example, actuation control information, such as "a recording start/termination" of a radio signal, from specific photography equipment. And the coded data from desired photography equipment is received according to this control information. Consequently, the image corresponding to the story which the user considers is easily incorporated by remote operation, and can be recorded now on videotape.

[0032] (21) The 21st this invention possesses a means extract the control information for the various operator command in which specific photography equipment carries out a radio transmission in a recording device the above-mentioned (16) term thru/or given in (19) terms, a playback means reproduce the video signal which memorized according to this control information, and the means that carry out the radio transmission of the reproduced video signal, and considers them as the configuration which reproduces and carries out the radio transmission of the memorized video signal according to control information. An extract means extracts actuation control information, such as "the control information for the various operator command sent by the radio signal, for example, "playback" of the recorded signal, a rapid traverse", "rewinding", and "a halt", from specific photography equipment. And the video signal which reproduced, or rewound and reproduced the memorized video signal according to this control information is transmitted as a radio signal. This radio signal can admire this image with the photography equipment of a user's hand, if the photography equipment which a user has is equipped with the reception function of a radio signal, and the function which restores to it and displays the radio signal which received. Consequently, even if the recording device is distantly [from a user's room] separated, the content of an image transcription can be easily checked by remote operation, and operability improves.

[0033] (22) Set the 22nd this invention to a recording device the above-mentioned (16) term thru/or given in (20) terms. Form a memory means in a recording apparatus and it enables it to store temporarily at least one received data at it. If assignment changed from the image channel of a certain photography equipment to the image channel of other photography equipments is carried out when changing the image from each two or more photography equipments to arbitration and presenting an image transcription Storage initiation of the received data of the image of the newly changed channel is carried out at a memory means. After record processing of the predetermined unit of the received data of the channel before a change is completed, it considers as the configuration which starts read-out of the received data memorized for the memory means, and enables record from a predetermined location (that is, request scene). All can be recorded on videotape, without according to this configuration, canceling the time lag accompanying a change and failing to record the target image scene on videotape, in case an image transcription is changed from a certain channel to another channel (i.e., when changing the object for an image transcription from the image of a certain photography equipment to the image of another photography equipment).

[0034] As mentioned above, according to this invention, it sets to the photography equipment and the recording device of a method which it transmits [recording device] to a recording device on radio, and make the image which used photography equipment and a recording device as another object, connected by the wireless circuit between both, and image pick-up equipment picturized record on it. The image recorded on the recording device can be checked by the photography equipment side, or can be admired now. Moreover, even when photography equipment and a recording device are separated, the system it is made convenient [a system] in respect of mutual actuation can be offered. Moreover, when there are two or more cameras, the image photoed not only with the image of a self camera but with other cameras is accommodated mutually, and the technique of the photography system which can be effectively

used now can be built.

[0035]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing.

[0036] While the configuration shown in the [example 1] example 1 shows the basic configuration as this invention system, uses photography equipment (camera section) and a recording device (record playback section) as another object and carrying out the bidirectional connection of between both by the wireless circuit Photography equipment and a recording device make remote operation possible mutually by actuation of the control unit prepared in each. Moreover, take a photograph with photography equipment, the image etc. is made to send and record on a recording device, and it enabled it to say that the image is reproduced, it sends to a photography equipment side, and a monitor is carried out with photography equipment.

[0037] Namely, it not only follows the conventional merit by having connected by the wireless circuit and having formed both into another object between both, but use photography equipment and a recording device as another object, and each enables remote operation of both. It is made for there to be also no disadvantage by having made it possible to carry out the monitor of the image which canceled the disadvantage by being another object as partner equipment can be operated free even if it was far away, and was recorded on the recording device by the photography equipment side, or to admire it, and photography equipment and a recording device being separated.

[0038] Hereafter, a detail is explained. Drawing 1 is block drawing showing the photography equipment and the recording device concerning this invention as an example 1. As shown in drawing, this photography equipment and a recording device have the camera section 1 and the record playback section 2 which were formed into another object, and have composition which carries out the radio transmission of the signal between the camera section 1 and the record playback section 2 bidirectionally.

[0039] Among these, the camera section 1 is equipped with the image pick-up section 3, the voice section 4, the camera signal-processing section 5, the contemporary memory 6, the camera control unit 7, the camera strange recovery section 8, a display 9, and an antenna ANT1, and is constituted.

[0040] Moreover, the record playback section 2 is equipped with the Records Department 10, the record playback control unit 11, the record playback strange recovery section 12, the record regenerative-signal processing section 13, and an input/output terminal 14 and an antenna ANT2, and is constituted.

[0041] The voice section 4 which is the component of the camera section 1 is for consisting of a microphone, a loudspeaker, etc., and being for outputting and inputting voice, and the image pick-up section 3 consisting of optical system of a lens etc., image sensors, such as CCD (solid state image pickup device), an image sensor actuation circuit, etc., and picturizing a photographic subject. The camera signal-processing section 5 which is the component of the camera section 1 changes the signal from the image pick-up section 3 into an analog or a digital video signal.

[0042] Moreover, the contemporary memory 6 which is the component of the camera section 1 is for memorizing temporarily the video signal in the camera section 1, and a sound signal, for example, consists of mass semiconductor memory etc. The camera control unit 7 which is the component of the camera section 1 It is for generating the required control signal accompanying various actuation and actuation of those of the camera section 1 and the record playback section 2. "The photography initiation / termination" in the camera section 1 and the record playback section 2, "zoom-in / zoom out", actuation control of "playback" of "transmitting initiation / termination" of a radio signal, "a recording start/termination", the video signal memorized in the contemporary memory 6, and a sound signal, "a rapid traverse", "rewinding", "a halt", etc., etc. -- and It is for generating the control signal for performing actuation control of "playback" of the video signal memorized to the Records Department 10, the record playback section 2, and a sound signal, "a rapid traverse", "rewinding", "a halt", etc., etc. from the camera section 1 side.

[0043] Moreover, the camera strange recovery section 8 which is the component of the camera

section 1 Change the video signal in the camera section 1, a sound signal, and a control signal into a radio signal, and it transmits in the air from an antenna ANT1. The radio signal from the record playback section 2 is received through an antenna ANT1. Moreover, a video signal, It is for changing into a sound signal and a control signal, and a display 9 is a display like the LCD (liquid crystal) monitor which carries out a screen display of the camera signal-processing section 5, the camera strange recovery section 8, and the video signal from the contemporary memory 6.

[0044] Moreover, the record playback control unit 11 which is the component of the record playback section 2 It is for generating the required control signal accompanying various actuation and actuation of those of the camera section 1 and the record playback section 2. "The photography initiation / termination" in the camera section 1 and the record playback section 2, "zoom-in / zoom out", actuation control of "playback" of "transmitting initiation / termination" of a radio signal, "a recording start/termination", the video signal memorized in the contemporary memory 6, and a sound signal, "a rapid traverse", "rewinding", "a halt", etc., etc. -- and It is for generating the control signal for performing actuation control of "playback" of the video signal memorized to the Records Department 10, the record playback section 2, and a sound signal, "a rapid traverse", "rewinding", "a halt", etc., etc. from the camera section 1 side.

[0045] Moreover, the record playback strange recovery section 12 which is the component of the record playback section 2 Receive the radio signal from the camera section 1, and it returns and incorporates to the original video signal, a sound signal, and a control signal. It is for changing a video signal, a sound signal, and a control signal into a radio signal, and transmitting. Moreover, the record regenerative-signal processing section 13 Dynamic-image compression methods, such as MPEG (Moving Picture Experts Group) which is the international standards of media integrated system dynamic-image compression about the video signal changed in the record playback strange recovery section 12, and a sound signal, It is for performing processing which changes into the record signal which is a compression signal by the audio compression coding method, and restores a record signal to a video signal or a sound signal.

[0046] Moreover, the Records Department 10 which is the component of the record playback section 2 the record signal from the record regenerative-signal processing section 13 -- a record medium (for example, a magnetic tape --) It is what carries out reading appearance of the record signal which records on semiconductor memory, a hard disk, a magneto-optic disk, an optical disk, etc., and has been recorded on the record medium, and outputs it. an input/output terminal 14 It is for outputting the video signal from the record playback strange recovery section 12 and the record regenerative-signal processing section 13, a sound signal, a control signal, and a record signal to the exterior of the record playback section 2, or inputting a video signal, a sound signal, a control signal, and a record signal into the record playback section 2 from other equipments.

[0047] The image on which the camera section 1 and the record playback section 2 are another object, and such this system of a configuration picturized them in the camera section 1 is sent to the record playback section 2 by the radio transmission, and is recorded.

[0048] By operating the camera control unit 7 which is the component of the example of actuation > camera section 1 about the camera section 1 and the record playback section 2 from the < section [camera] 1 side, various actuation of the camera section 1 and the record playback section 2 can be performed. For example, "the photography initiation / termination" in the camera section 1 and the record playback section 2, Zoom-in / "zoom out" actuation of the optical system of the camera section 1, "transmitting initiation / termination" of a radio signal, actuation control of "playback" of "a recording start/termination", the video signal memorized in the contemporary memory 6, and a sound signal, "a rapid traverse", "rewinding", "a halt", etc., etc. -- and Actuation control of "playback" of the video signal memorized to the Records Department 10, the record playback section 2, and a sound signal, "a rapid traverse", "rewinding", "a halt", etc., etc. can be performed from the camera section 1 side.

[0049] Therefore, when a user photos an image with a camera, it will "-photography-start, "the camera control unit 7 in the camera section 1 will be operated.

[0050] If "photography initiation" actuation accomplishes, as a result of outputting the control

signal for it from the camera control unit 7, in the camera section 1, the photographic subject image caught through optical system is changed into an electrical signal in the image pick-up section 3, it is sent to the camera signal-processing section 5, and this electrical signal is changed into an analog or a digital video signal here. And this video signal is displayed on the display 9 which the camera section 1 has as an image.

[0051] Moreover, the voice section 4 catches surrounding voice, changes it into an electrical signal, and is inputted into the contemporary memory 6. Moreover, the video signal outputted from the camera signal-processing section 5 is inputted also into the contemporary memory 6, and this contemporary memory 6 memorizes this video signal and the sound signal from the voice section 4 on a target a part for fixed time amount, and temporarily. This storage can also be made into the gestalt which carries out updating record of the part for fixed time amount serially.

[0052] therefore -- if this is reproduced and it displays on a display 9, and the content can be confirmed, or it can admire, or can also be made to transmit and record on the record playback section 2 and this is within the limits of updating time amount -- a time delay -- with, it can carry out. Moreover, the signal of the raw voice which the video signal of the image under present photography outputted not only from transmission of a video signal or a sound signal but from the camera signal-processing section 5 which the contemporary memory 6 holds, and the voice section 4 caught can also be made to transmit and record on the record playback section 2.

[0053] When making the video signal and sound signal in such the camera section 1 transmit and record on the record playback section 2, the camera control unit 7 can be carried out by carrying out actuation and "transmitting initiation" "recording start" actuation of a radio signal.

[0054] That is, the carrying-out-for camera control unit 7-actuation and "transmitting initiation" "recording start" actuation of radio signal camera control unit 7 generates the control signal for it, and actuation control of the camera strange recovery section 8 or the contemporary memory 6 is carried out.

[0055] The camera strange recovery section 8 changes the concerned "recording start" control signal from the camera control unit 7 into a radio signal, it transmits in the air from an antenna ANT1, and by the radio signal, after a carrier beam, changes a video signal [in / for the comprehension signal (ACK) from the carrier beam record playback section 2 / in this / the camera section 1], and a sound signal into a radio signal, and transmits in the air from an antenna ANT1.

[0056] In the carrier beam record playback section 2, the radio signal is received through an antenna ANT2, and the radio signal from the camera section 1 is passed to the record playback strange recovery section 12. In the record playback strange recovery section 12, it restores to this radio signal and changes into a video signal, a sound signal, and a control signal. And a control signal is passed to the control section which is not illustrated. A control section recognizes having received the "recording start" control signal, changes the record regenerative-signal processing section 13 and the Records Department 10 into a standby condition, and transmits a comprehension signal (ACK) in the air by the radio signal through an antenna ANT2.

[0057] Moreover, in the record playback strange recovery section 12, the record regenerative-signal processing section 13 is passed about a video signal and a sound signal among the video signal which restored to it and obtained the radio signal, a sound signal, and a control signal.

[0058] The video signal changed in the record playback strange recovery section 12 is changed into the record signal of dynamic-image compression methods, such as MPEG, and is changed into the record signal which is a compression signal by the audio compression coding method about a sound signal, and the record regenerative-signal processing section 13 gives it to the Records Department 10. At the Records Department 10, the record signal from the record regenerative-signal processing section 13 is recorded on a record medium.

[0059] The camera control unit 7 which is the component of the camera section 1 is operated and "a rebirth" of the Records Department 2 is directed to, reproduce the image and voice which were recorded on the record playback section 2 on the other hand, and admire by the

camera section 1 side. Then, the camera strange recovery section 8 changes into a radio signal the control signal which directs the "playback" concerned from the camera control unit 7, and if it transmits in the air and the comprehension signal (ACK) from the carrier beam record playback section 2 is received for this from an antenna ANT1 by the radio signal, it will be in a standby condition.

[0060] In the record playback section 2, it gets to know that the control section received the control signal which directs "playback" by restoring to the control signal which directs "playback" in the record playback strange recovery section 12. And after it controls the control section concerned of the record playback section 2 that a comprehension signal (ACK) should be generated and it changes this into a radio signal in the record playback strange recovery section 12, it transmits in the air from an antenna ANT2.

[0061] And in the control section of the record playback section 2, "playback" is directed to the Records Department 10 and the carrier beam Records Department 10 reproduces a record signal for these directions from a record medium. The reproduced record signal is sent to the record regenerative-signal processing section 13, and a record signal is restored to an original video signal and an original sound signal from a coding code here (however, when a record signal can be decoded by the receiving side, you may be the gestalt which does not carry out decode but is transmitted in this phase with a record signal). And the video signal and sound signal which were changed are transmitted in the air through an antenna ANT2, after a radio signal becomes irregular in the record playback strange recovery section 12.

[0062] In the camera section 1, while receive through an antenna ANT1, restoring to this radio signal in the camera strange recovery section 8, returning to a video signal and a sound signal, giving a sound signal to the voice section 4 and making it output as voice, a video signal is given to a display 9 and displayed as an image.

[0063] Consequently, the user of a camera can view and listen to the image and voice which were recorded on the record playback section 2 to a camera side.

[0064] Moreover, when a user wants to carry out a rapid traverse and rewinding, the camera control unit 7 is operated and it directs "a rapid traverse" or "rewinding". [of the Records Department 2] Then, the camera strange recovery section 8 changes into a radio signal the control signal which directs concerned "a rapid traverse" or "rewinding" from the camera control unit 7, and transmits in the air from an antenna ANT1. And it gets to know having received the control signal which directs "a rapid traverse" or "rewinding" by restoring to the control signal which directs "a rapid traverse" or "rewinding" for this in the carrier beam record playback section 2 in the record playback strange recovery section 12.

[0065] and -- the record playback section 2 -- a control section -- the Records Department 10 -- "a rapid traverse" or "rewinding" -- directing -- the Records Department 10 -- a record medium -- "a rapid traverse" -- or -- " -- it is rewound "operated.

[0066] If the amount "fast forwarded" or the amount which carried out "rewinding" is sent to a camera side in the record playback section 2 and it is made to display it at this time, it will become what has good user-friendliness.

[0067] A user operates the camera control unit 7 and directs "termination" to end actuation. Then, the camera strange recovery section 8 changes into a radio signal the control signal which directs the "termination" concerned from the camera control unit 7, and transmits in the air from an antenna ANT1. And it gets to know having received the control signal which directs "termination" by restoring this to a control signal in the record playback strange recovery section 12 in the carrier beam record playback section 2 through the antenna ANT2.

[0068] And in the record playback section 2, "termination" is directed to the Records Department 10 and the Records Department 10 ends the actuation to a record medium.

[0069] The above was explanation of actuation of the camera section 1 and the record playback section 2 accompanying the various actuation from the camera section 1. Next, the case where the camera section 1 and the record playback section 2 are operated from the record playback section 2 side is explained.

[0070] Not only actuation of the record playback section 2 but also various actuation of the camera section 1 can be carried out by operating the control unit 11 of the record playback

section 2 for the camera section 1 and the record playback section 2 from the < section [record playback] 2 side in an example of actuation > book system.

[0071] For example, "photography initiation / termination", [in / by operating a control unit 11 / the camera section 1 and the record playback section 2] Zoom-in / "zoom out" actuation of the optical system of the camera section 1, "transmitting initiation / termination" of a radio signal, actuation control of "playback" of "a recording start/termination", the video signal memorized in the contemporary memory 6, and a sound signal, "a rapid traverse", "rewinding", "a halt", etc., etc. -- and Actuation control of "playback" of the video signal memorized to the Records Department 10, the record playback section 2, and a sound signal, "a rapid traverse", "rewinding", "a halt", etc., etc. can be performed from the record playback section 2 side.

[0072] Therefore, when photoing an image with a camera, operation also of "photography-starting, "also operating the control unit 11 from the record playback section 2 side, is attained.

[0073] If "photography initiation" actuation accomplishes, the control signal for it will be outputted from a control unit 11. Become irregular in the record playback strange recovery section 12, it is transmitted in the air from an antenna ANT2, and this sets in the camera section 1. The result given to the control section which is received from an antenna ANT1 and restores in the camera strange recovery section 8, and which is not illustrated, In the camera section 1, image pick-up actuation is started, the photographic subject image caught through the optical system of the camera section 1 is changed into an electrical signal in the image pick-up section 3, it is sent to the camera signal-processing section 5, and this electrical signal is changed into an analog or a digital video signal here. And this video signal is displayed on the display 9 which the camera section 1 has as an image.

[0074] Moreover, when making it make the image which the camera photoed record on the record playback section 2, actuation and "transmitting initiation" "recording start" actuation are carried out for the control unit 11 in the record playback section 2. As a result of being given to the control section to which the control signal for it is outputted from a control unit 11, becomes irregular in the record playback strange recovery section 12 by this, and it is transmitted in the air from an antenna ANT2, and it is received from an antenna ANT1 in the camera section 1, and this restores in the camera strange recovery section 8 and which is not illustrated, in the camera section 1, actuation control of the camera strange recovery section 8 or the contemporary memory 6 is carried out.

[0075] The target memorizes the video signal and the sound signal from the voice section 4 a part for fixed time amount, and temporarily at the contemporary memory 6, the content of storage is read, and this is given to the camera strange recovery section 8. And after modulating and radio-signal-izing this in this camera strange recovery section 8, it sends out in the air from an antenna ANT1.

[0076] Moreover, the signal of the raw voice which the video signal of the image under present photography outputted not only from transmission of a video signal or a sound signal but from the camera signal-processing section 5 which the contemporary memory 6 holds, and the voice section 4 caught can also be made to transmit and record on the record playback section 2.

[0077] In the carrier beam record playback section 2, the radio signal is received through an antenna ANT2, and the radio signal from the camera section 1 is passed to the record playback strange recovery section 12. In the record playback strange recovery section 12, it restores to this radio signal and returns to a video signal, a sound signal, and a control signal. And in the record playback strange recovery section 12, the record regenerative-signal processing section 13 is passed about a video signal and a sound signal among the video signal which restored to it and obtained the radio signal, a sound signal, and a control signal.

[0078] In the video signal acquired from the record playback strange recovery section 12 not being compressed, the record regenerative-signal processing section 13 is changed into the record signal which will be a compression signal by the audio compression coding method if this did not compress about a sound signal, either by changing into the record signal of dynamic-image compression methods, such as MPEG, and gives the Records Department 10.

[0079] If compression coding of a video signal or the sound signal is carried out, compression coding will be anew given to the Records Department 10 as it is without carrying out.

[0080] At the Records Department 10, the record signal from the record regenerative-signal processing section 13 is recorded on a record medium.

[0081] The control unit 11 in the record playback section 2 is operated and "playback" and "transmitting initiation" of the Records Department 2 are directed to, reproduce the image and voice which were recorded on the record playback section 2 side at the record playback section 2 concerned on the other hand, and send to the camera section 1 side. Then, the record playback strange recovery section 12 is given to the control section to which the record playback section 2 does not illustrate the control signal which directs the "playback" concerned from a control unit 11, and it controls a control section in order to make it transmit to the record playback modulation section 12, while making the Records Department 10 start playback.

[0082] The record playback strange recovery section 12 becomes irregular, and the regenerative signal of the Records Department 10 is radio-signal-ized, and is transmitted in the air through an antenna ANT2.

[0083] Receive this radio signal through an antenna ANT1 at the camera section 1, get over by the camera strange recovery section 8, return to a video signal and a sound signal, give a video signal to a display 9, it is made to display as an image, a sound signal is given to the voice section 4, and it is made to output as voice. Moreover, it is given to the contemporary memory 6 and held.

[0084] Thus, it is that the camera section 1 and the record playback section 2 are another object, and this system operates the control unit 11 of the record playback section 2, or the control unit 7 of the camera section 1. While being able to carry out not only actuation of the record playback section 2 but also various actuation of the camera section 1 By the radio transmission, send the image picturized in the camera section 1 to the record playback section 2, and it is recorded on the record playback section 2 concerned. Moreover, since the radio transmission of the image reproduced in the record playback section 2 is carried out to the camera section 1 and it enables it to admire by the camera section 1 side The camera section 1 can attain now much more small lightweight-ization, and the long duration record by the burden dissolution to the user by the formation of small lightweight of this camera section 1, low-powerizing, and limit relaxation of the equipment size of the record playback section 2 etc. is attained. Moreover, it not only can operate the camera section 1 and the record playback section 2 by remote control mutually, but it can check the video signal recorded on the Records Department 10, the record playback section 2, a sound signal or the video signal inputted from the outside, and a sound signal by the display 9 of the camera section 1 a user's hand. Furthermore, it also becomes possible by connecting the input/output terminal 14 of the record playback section 2 to the public transmission network 25 to transmit and receive a video signal, a sound signal, a record signal, and a control signal through the public transmission network 25 between this photography equipment and a recording apparatus, a domestic video server, etc.

[0085] In addition, this system is constituted so that it may have a control unit in the record playback section 2 and actuation of a system including remote operation of the camera section 1 may be made to it. Therefore, the camera section 1 can be used as an uninhabited surveillance camera, if it constitutes so that the user may not necessarily have in a hand and the enter end of the power source of the camera section 1 can be operated by the record playback control unit 11. Moreover, when recording only an image, as shown in drawing 2, you may make it the configuration which omitted the voice section 4 from the camera section 1.

[0086] Here, the data format of the radio signal used in this invention system is described.

<Example of data format of radio signal> drawing 3 is the data format block diagram of the radio signal by which is changed in the camera strange recovery section 8 and the record playback strange recovery section 12, and a radio transmission is carried out between the camera section 1 and the record playback section 2. The data format used in this system As are shown in drawing 3 (a), and it consists of a header unit 300 which is the storing field of a control signal, and the data area section 310 which is the storing field of image voice data and is shown in drawing 3 (b) Header unit 300 part consists of control data 303 for performing actuation control of the camera ID data 302 for identifying the source of transmission of a radio signal in the sign 301 which shows the head of data, the camera section 1, and the record playback section 2, the

camera section 1, and the record playback section 2.

[0087] The camera strange recovery section 8 is mainly concerned with <example of configuration of the camera strange recovery section 8> drawing 4, and it shows the example of a configuration by the side of the modulation processing system section. With the wireless receive section 15 which this camera strange recovery section 8 receives the radio signal from the record playback section 2 or another camera, and decodes a control signal etc. as shown in drawing 4. The error judging section 16 which judges the error rate of the radio signal which received etc., and the image coding section 17 which carries out compression coding of the video signal, and generates an image compression sign train. The voice coding section 18 which carries out compression coding of the sound signal, and generates a speech compression sign train. It consists of the multiplexing section 19 which multiplexes an image compression sign train, a speech compression sign train, and the control signal generated by the camera control unit 7, and generates a multiplexing sign train, and the wireless transmitting section 20 which carries out the wireless modulation of the multiplexing sign train outputted from this multiplexing section 19, and transmits.

[0088] In such a configuration, the image coding section 17 and the voice coding section 18 perform processing which carries out compression coding of the video signal and sound signal which were inputted at smaller amount of information. In addition, the method of compression coding is ISO. The method specified by MPEG may be used.

[0089] That is, the image coding decryption section 17 is picturized in the image pick-up section 3, performs processing which carries out compression coding of the image video-signal-ized in the camera signal-processing section 5 so that amount of information may decrease more, and sends the output which carried out compression coding to the multiplexing section 19. Moreover, the voice coding section 18 performs processing which carries out compression coding of the sound signal caught in the voice section 4 so that amount of information may decrease more, and sends the output which carried out compression coding to the multiplexing section 19. Moreover, a control signal, camera ID data, etc. are given to the multiplexing section 9, and the multiplexing section 19 multiplexes these encoded information, a control signal, etc., and transmits to the wireless transmitting section 20. The wireless transmitting section 20 radio-signal-izes this multiplexed signal, and transmits in the air from an antenna ANT1.

[0090] Moreover, it is received through an antenna ANT1 and the radio signal from other cameras and record playback sections 2 is sent to the wireless receive section 15. And in this wireless receive section 15, it restores to the received signal and gives the error judging section 16, and this error judging section 16 judges the rate (error rate) and properties of an error (burst length etc.) which were mixed in the radio signal which received from the record playback section 2 or another camera, and sends a wireless condition signal to the image coding section 17, the voice coding section 18, and the multiplexing section 19.

[0091] You may make it use the image and voice coding method which has the resistance to a wireless error here in consideration of a video signal, a sound signal, etc. being sent to record playback section 2 grade through the radio signal which an error mixes as a coding method adopted in the image coding section 17 and the voice coding section 18. For example, an image frame is divided into an image compression coding method to a fine field. The method called the video packet which enables it to plan resynchronization for every field. The doubleness method of the critical information which enables it to perform decode from the information on another side even if it doubles the important information in a sign train and one information is missing. Refresh coding, an error correcting code, etc. which aim at recovery of the video signal which encoded in the frame not only the forward direction of a sign train but a part of the variable-length sign (reversible VLC) which can decode also from hard flow, and in which bidirectional decode is possible and a video signal, and deteriorated may be used.

[0092] By using such a method, even if the error of wireless mixes, an image and a sound signal can be sent more to high quality. Moreover, also in the multiplexing section 19, cures against a wireless error, such as an error correcting code and resending processing (ARQ) of the mistaken information, may be performed.

[0093] Although the error judging section 16 judges the rate (error rate) and properties of an

error (burst length etc.) which were mixed in the radio signal which received from the record playback section 2 or another camera and a wireless condition signal is sent to the image coding section 17, the voice coding section 18, and the multiplexing section 19 as mentioned above. In the carrier beam image coding section 17, the voice coding section 18, and the multiplexing section 19, the method and parameter of compression coding of an image and a sound signal are changed for this according to a wireless condition signal. And it can be made by this a coded signal strong against an error, and wireless transmission can be carried out now.

[0094] in addition, as an example which change the method and parameter of compression coding of an image and a sound signal according to a wireless condition signal, when an error rate be high, in the image coding section 17, the processing that make [many] the rate of coding in a frame for refresh, use the strength of an error correcting code with more powerful correction capacity, or the die length of a video packet be change according to burst length be raise. Moreover, you may be processing of using the powerful error correcting code of correction capacity by the case where an error rate is high, or making [many] the maximum retry count of ARQ (resending processing) in the multiplexing section 19.

[0095] By having made it make camera ***** 8 carry out such modulation processing, it can be quality, wireless transmission of the image and sound signal, and control signal which carried out compression coding can be carried out now, good image and sound signal are transmitted, it is made to present record or admiration can be presented.

[0096] as mentioned above, in the photography equipment and the recording device of this invention of an example 1 It not only sends an image and a sound signal to the record playback section 2 or another camera, but it receives the radio signal from the record playback section 2 or another camera. By changing the method and parameter which judge the error rate of the radio signal which received and carry out compression coding of an image and the sound signal by this, an image and a sound signal can be sent more to high quality corresponding to the condition of a radio-transmission way.

[0097] In addition, if general more many error resistance coding methods are combined or a coding parameter is set up, although the resistance over the wireless error of an image and speech compression coding will increase, quality when a wireless error does not mix will deteriorate. However, in this system, an error rate can be searched for, if the error rate and property which were mixed in the record playback section 2 or another KAMERAHE ***** radio signal are known, according to this, the parameter and method of an image and voice coding will be changed, and since the image and voice coding for which it was suitable with the wireless error can be performed, the quality of a signal can be held.

[0098] When the record playback section 2, and an another camera and two-way communication are being performed, it is thought that the wireless error with the property of the same error rate as the radio signal which received, or an error is mixed also in the radio signal sent to the record playback section 2 or another camera from the camera section 1.

[0099] Therefore, if the method and parameter of compression coding of an image and a sound signal which are transmitted according to the error rate and property of a receiving radio signal are changed, compression coding for which it was suitable with the property of a radio-transmission way can be performed.

[0100] As explained in full detail, while the configuration shown in the example 1 is a basic configuration of this invention, using photography equipment and a recording device as another object and connecting by the wireless circuit between both, as mentioned above, photography equipment and a recording device Make remote operation possible mutually, and take a photograph with photography equipment, the image etc. is made to send and record on a recording device by actuation of the control unit prepared in each, and it enabled it to say that the image is reproduced, it sends to a photography equipment side, and a monitor is carried out with photography equipment.

[0101] Thus, it not only follows the conventional merit by having connected by the wireless circuit and having formed both into another object between both, but this invention uses photography equipment and a recording device as another object, and each enables remote operation of both. It becomes possible to carry out the monitor of the image which canceled the

disadvantage by another object configuration as could operate partner equipment free even if it was far away, and was recorded on the recording device by the photography equipment side, or to admire it, and the disadvantage by photography equipment and a recording device being separated can also be canceled now.

[0102] Next, while using this basic configuration as the base, when there are two or more cameras which can carry out the radio transmission of the video signal etc. by the wireless circuit, the image photoed not only with the image of a self camera but with other cameras is accommodated mutually, and the example of the photography system it enables it to use effectively is explained.

[0103] [Example 2] drawing 5 is a block diagram explaining the example of a configuration of this photography equipment for using not only a user's camera but the image from the camera of others who exist around a user when there are two or more cameras of others who can do the radio transmission of the video signal etc. by the wireless circuit and voice, and a recording apparatus. In drawing, 1 is the camera section formed into another object, and 2 is the record playback section formed into another object. Moreover, 21 is camera with the another camera section 1. It has composition which can carry out the radio transmission of a video signal, a sound signal, and the control signal bidirectionally between these camera section 1, a camera 21, and the record playback section 2.

[0104] The camera section 1 and a camera 21 are equipped with the image pick-up section 3, the voice section 4, the camera signal-processing section 5, the contemporary memory 6, the camera control unit 7, the camera strange recovery section 8, a display 9, and antennas ANT1 and ANT21, and are constituted.

[0105] Moreover, the record playback section 2 is equipped with the Records Department 10, the record playback control unit 11, the record playback strange recovery section 12, the record regenerative-signal processing section 13, and an input/output terminal 14 and an antenna ANT2, and is constituted.

[0106] In addition, the configuration of a camera 21 does not need to be the configuration same [that what is necessary is being able to carry out the radio transmission of the video signal etc. by the wireless circuit, and having come just to be able to carry out data transfer with this photography equipment and a recording apparatus] as the camera section 1 used by this invention system not necessarily.

[0107] Here The image pick-up section 3, the voice section 4, the camera signal-processing section 5, Fundamentally, since the contemporary memory 6, the camera control unit 7, the camera strange recovery section 8, a display 9, the Records Department 10, the record playback control unit 11, the record playback strange recovery section 12, the record regenerative-signal processing section 13, and an input/output terminal 14 are the same, the element and function of the same name same sign in which it explained by drawing 1 With reference to explanation by the example 1, explanation is not given anew here if needed.

[0108] In the system explained here, other cameras 21 are enabled to incorporate a video signal and a sound signal in self camera section 1 and record playback section 2 from other cameras 21, or to incorporate the video signal and sound signal from self camera section 1 and record playback section 2.

[0109] In the camera control unit 7 which is a control unit by the side of a camera in this invention system, or the record playback control unit 11 which is a control unit by the side of the record playback section with a manual operation button etc. Therefore, "disclosure", When it enables it to have performed "secret" setting-out actuation and disclosure is operated, in the record playback strange recovery section 12 of the camera strange recovery section 8 of the camera section 1, or the record playback section 2 It has considered as the disclosure which exists in the control data for performing actuation control of the camera section 1 of the radio signal by which a radio transmission is carried out between the camera section 1 and the record playback section 2, and the record playback section 2, or the configuration in which the sign which shows secret is set as the setting-out response by the above-mentioned actuation. Moreover, although it incorporates regardless of the content of the sign which shows "disclosure" in control data, and secret ["secret"] and can use since a video signal, a sound

signal, etc. by the radio transmission between the camera section 1 and the record playback section 2 are the system of a self-system. The radio signal which received from other cameras 21 which are the systems besides a self-system can be incorporated and used only when the sign which shows "disclosure" in the control data in the radio signal and secret ["secret"] is "disclosure." Since a video signal, a sound signal, etc. by the radio transmission between the camera section 1 seen from other camera side and the record playback section 2 are a signal from the system of other systems, when the content of the sign which shows "disclosure" in control data and secret ["secret"] is "disclosure", they are restricted, and can be incorporated and used by the system of the system of the camera 21.

[0110] In order to realize most simply the structure which cannot use the signal with which the 3rd person has been transmitted by "disclosure" and secret ["secret"], it is encryption / un-enciphering about a signal. That is, in "disclosure", it un-enciphers and, in a "secret" case, enciphers.

[0111] In such a configuration, even if the user of the now, for example, camera, section 1 and the user of another camera 21 turn the content of the radio signal which transmits from the camera section 1 and a camera 21 concerned to other users who are on the outskirts, the case where it is said that all are exhibited is considered.

[0112] In this case, the manual operation button of the camera control unit 7 and the record playback control unit 11 performs "open" setting-out actuation.

[0113] That is, setting out referred to as "opening" the signal to transmit to others by operating this since there is a manual operation button for performing setting-out actuation "disclosure" and "secret" in the camera control unit 7 and the record playback control unit 11 is performed. And between the camera section 1 and the record playback section 2, if this disclosure is operated, as the sign which shows the disclosure which exists in the control data for the actuation control in the radio signal by which a radio transmission is carried out between the record playback sections of another camera 21 and its camera 21, or secret shows that the content of this radio signal is exhibited, it will be set up. (In addition, it is also possible by setting up Camera ID or the new control data sign of a radio signal not to be many and unspecified persons of the camera section 1 circumference, and to limit the disclosure place of a radio signal.) therefore The camera strange recovery section 8 in the camera section 1 which received the radio signal transmitted from another camera 21 The radio signal from the another camera 21 concerned can be changed now into a video signal and a sound signal, and the user of the camera section 1 can check the video signal from another camera 21, and a sound signal by the display 9 of the camera section 1 at hand.

[0114] Also in another camera 21 which similarly received the radio signal transmitted from the camera section 1 or the record playback section 2 the camera strange recovery section 8 of the camera concerned The radio signal transmitted from the camera section 1 or the record playback section 2 is received, it can change now into a video signal and a sound signal, and the user of the another camera 21 concerned can check the video signal from the camera section 1 or the record playback section 2, and a sound signal by the display 9 of a camera 21.

[0115] and if the user of the camera section 1 uses the video signal from checked another camera 21, and a sound signal and excels, he can memorize the video signal and sound signal (namely, -- from the selected camera) of a channel which carried out selection actuation in the contemporary memory 6 of transmission or the camera section 1 at the record playback section 2 by performing selection actuation with the manual operation button of the camera control unit 7 and the record playback control unit 11 etc. That is, the camera strange recovery section 8 inputs the video signal and sound signal into the contemporary memory 6 serially, and makes them memorize by the above-mentioned selection actuation. And this is read, and it becomes irregular by the camera strange recovery section 8, changes into a radio signal, and transmits in the air from an antenna ANT1 with the control signal for "record" directions.

[0116] In the carrier beam record playback section 2, the radio signal is received through an antenna ANT2, and the radio signal from the camera section 1 is passed to the record playback strange recovery section 12. In the record playback strange recovery section 12, it restores to this radio signal and changes into a video signal, a sound signal, and a control signal.

[0117] In the record playback strange recovery section 12, the record regenerative-signal processing section 13 is passed about a video signal and a sound signal among the video signal which restored to it and obtained the radio signal, a sound signal, and a control signal.

[0118] The video signal changed in the record playback strange recovery section 12 is changed into the record signal of dynamic-image compression methods, such as MPEG, and is changed into the record signal which is a compression signal by the audio compression coding method about a sound signal, and the record regenerative-signal processing section 13 gives it to the Records Department 1. At the Records Department 10, the record signal from the record regenerative-signal processing section 13 is recorded on a record medium.

[0119] Thereby, the video signal and sound signal by which a radio transmission is carried out from other cameras and which were exhibited are recordable on the record playback section 2 in the system of a self system.

[0120] On the contrary, when the radio signal transmitted from another camera 21 is made secret The record playback strange recovery section 12 of the camera strange recovery section 8 of the camera section 1 or the record playback section 2 detects the sign which shows "secret" out of the recovery signal of the radio signal which received. By this It functions as not taking out the recovery output of the radio signal transmitted from the camera 21 to the temporary memory 6, a display 9, and the voice section 4. Therefore, when a radio signal with secret setting out is received, the radio signal can be changed into a video signal and a sound signal neither in the camera strange recovery section 8 nor the record playback strange recovery section 12.

[0121] When similarly the radio signal transmitted from the camera section 1 or the record playback section 2 is made secret The camera strange recovery section 8 of another camera 21 detects the sign which shows "secret" out of the recovery signal of the radio signal which received. By this It functions as not taking out the recovery output of the radio signal transmitted from the camera section 1 or the record playback section 22 to the temporary memory 6, a display 9, and the voice section 4. Therefore, when a radio signal with secret setting out is received, the radio signal can be changed into a video signal and a sound signal neither in the camera strange recovery section 8 nor the record playback strange recovery section 12.

[0122] In addition, the technique referred to as choosing it as some [at least] coded data according to selection of secret/disclosure of a radio signal as a configuration which can choose the output which performed encryption processing, and the output which has not carried out encryption processing if an example is given although especially the technique of preventing from changing a radio signal into a video signal and a sound signal does not limit this can be thought.

[0123] That is, a means perform and output encryption processing to coded data establishes, a means choose the output of this encryption processing output means and the output which has not been carried out in encryption processing prepares, the output have not carried out encryption processing chooses and this makes to choose the output of an encryption processing output means, to transmit this at a radio signal, and transmit at a radio signal at the time of disclosure at the time of secret [of a radio signal]. And a video signal and a sound signal can be delivered now only to a specific record regenerative apparatus by performing decode processing through this at the time of reception of the radio signal which forms an encryption decode processing means in the record playback section 2 which is a specific recording device, and has been enciphered.

[0124] Moreover, when two or more cameras with which the radio signal is exhibited around camera section 1 exist, the camera section 1 receives each radio signal of these disclosure, restores to a video signal, a sound signal, and a control signal, and can use them if needed. And since there are two or more cameras which can be used in this case, this will be changed and used.

[0125] In this system, by performing switch actuation with the manual operation button of the camera control unit 7 and the record playback control unit 11 etc., one by one A channel is changed. The video signal from one camera of the request for one channel, Enable it to check a sound signal by the display 9 of the camera section 1 at hand, or Or as the screen of a display 9 is divided into N screen (however, N two or more integers) and the multi-picture features of it

can be carried out like drawing 6 , it enables it to have checked the video signal from each camera, and the sound signal by the display 9 of the camera section 1 at hand.

[0126] and if the user of the camera section 1 uses the video signal from checked another camera 21, and a sound signal and excels, he can memorize the video signal and sound signal (namely, -- from the selected camera) of a channel which carried out selection actuation in the contemporary memory 6 of transmission or the camera section 1 at the record playback section 2 by performing selection actuation with the manual operation button of the camera control unit 7 and the record playback control unit 11 etc. That is, the camera strange recovery section 8 inputs serially the selected video signal and selected sound signal of a channel into the contemporary memory 6, and makes them memorize by the above-mentioned selection actuation. And this is read, and it becomes irregular by the camera strange recovery section 8, changes into a radio signal, and transmits in the air from an antenna ANT1 with the control signal for "record" directions.

[0127] In the carrier beam record playback section 2, the radio signal is received through an antenna ANT2, and the radio signal from the camera section 1 is passed to the record playback strange recovery section 12. In the record playback strange recovery section 12, it restores to this radio signal and changes into a video signal, a sound signal, and a control signal.

[0128] In the record playback strange recovery section 12, the record regenerative-signal processing section 13 is passed about a video signal and a sound signal among the video signal which restored to it and obtained the radio signal, a sound signal, and a control signal.

[0129] The video signal changed in the record playback strange recovery section 12 is changed into the record signal of dynamic-image compression methods, such as MPEG, and is changed into the record signal which is a compression signal by the audio compression coding method about a sound signal, and the record regenerative-signal processing section 13 gives it to the Records Department 1. At the Records Department 10, the record signal from the record regenerative-signal processing section 13 is recorded on a record medium.

[0130] In addition, although there is the number of the cameras with which the radio signal is exhibited more than N of the number of split screens also in a certain case, and the numbers of split screens will run short even if it carries out multi-picture features when such, it is good to replace a screen in order in this case. Thereby, it becomes possible to see the image of all cameras by time sharing.

[0131] Moreover, the screen of the channel under record can perform the check of a record screen by displaying in the center or attaching a frame (or mark of attention according to it). Furthermore, like drawing 7 , the image of the channel under record can be displayed by the full screen, the image of another camera 21 can be taken out with a child screen, and the method of changing by actuation can also be adopted.

[0132] In addition, while checking the video signal from another camera 21, and the sound signal, if asynchronous or a time code is attached and it is made to transmit later, risk of photography in the meantime stopping breaking off, and losing a photography chance is also avoidable [the video signal and sound signal which are photoed in the camera section 1 are memorized in the contemporary memory 6, and]. The user of the camera section 1 transmits the camera ID in the radio signal of another camera 21 to the record playback section 2 by selection actuation from the camera section 1 concerned. Moreover, in the record playback section 2 It is made to make the camera ID of the another camera 21 concerned (identification information) hold. In this condition The image of the target camera can be made to record on the record playback section 2, when picturizing with the camera of an a large number base if the video signal and sound signal which are acquired from the radio signal from a camera with the information on the held camera ID are recorded, without losing a chance.

[0133] Furthermore, if time amount change of the video signal in each camera, voice level, etc. are compared and selection of the camera section 1 or the video signal from each camera, and a sound signal is switched when two or more cameras with which the radio signal is exhibited around camera section 1 exist, a photographic subject which moves while uttering voice can be photoed exactly. In addition, if the user does not necessarily need to have the camera section 1 in a hand and it enables it to operate it to the enter end of the power source of two or more

cameras by the record playback control unit 11, it can build an uninhabited surveillance camera system easily.

[0134] Therefore, according to this invention, when there are two or more cameras, the image photoed not only with the image of a self camera but with other cameras is accommodated mutually, and the technique of the photography system which can be effectively used now can be built.

[0135] In addition, this system forms data memory means, such as contemporary memory, in the record playback section 2. If assignment changed from the image channel of a certain camera to the image channel of other cameras is carried out when it enables it to store temporarily at least one received data, the image from each two or more cameras is changed to arbitration and it presents an image transcription. It is good to consider as the configuration which carries out storage initiation of the received data of the image of the newly changed channel at a memory means, starts read-out of the received data memorized for the memory means after record termination of the predetermined unit of the received data of the channel before a change, and enables record from a predetermined location. According to this configuration, in case an image transcription is changed from a certain channel to another channel (i.e., when changing the object for an image transcription from the image of a certain camera to the image of another camera), the time lag accompanying a change is canceled, and the target image can be recorded on videotape altogether, without spoiling a chance.

[0136] The above was the example it enabled it to utilize freely in the camera and recording device which can receive this, when the video signal and sound signal which carry out a radio transmission were made disclosure. In such a system, since the image from the camera which a camera station does not understand will be used, if the location of a camera can hold as information, it is much more convenient. Then, it explains below by making into an example 3 the example which the camera station of a camera understood next.

[0137] [Example 3] In order to make it the camera station of each camera with which it is dotted known or to make it, as for this example, a self camera station known, location detection equipment is given to each camera. That is, as shown in drawing 8, the camera location detecting element 22 which detects the location and bearing of the exposure axis of the camera section 1 concerned in the camera section 1, and gives the information to the camera strange recovery section 8 and a display 9 is provided.

[0138] this camera location detecting element 22 detect the location and the bearing of the exposure axis of the camera section 1 concerned by GPS (Global Positioning System; global positioning system: equipment with which a marine vessel, the aircraft, an automobile, etc. get to know their location among 24 GPS Satellites which the U.S. launched simultaneously in response to the fact that the electric wave from four or more pieces), an earth magnetism sensor, etc., and generate the camera position signal as information on a terrestrial location location. And the camera strange recovery section 8 concerned is the configuration which can display the location and sense of a camera by being able to modulate this camera position signal, and being able to transmit outside from an antenna ANT1 as a radio signal, and giving a display 9 by giving the camera position signal which the camera location detecting element 22 generates to the camera strange recovery section 8 with map information depending on the need.

[0139] Moreover, drawing 9 is a format of the transmission data used in this system, and is a block diagram in case a camera position signal is included in the radio signal by which a radio transmission is carried out between the camera section 1 and the record playback section 2. In addition to the head sign 301, the camera ID 302, and the control data 303, the area of the camera location data 304 is prepared for the header 300, and the camera position signal which the camera location detecting element 22 generates is stored here, and it transmits to it.

[0140] Drawing 10 is drawing explaining actuation of this photography equipment by the camera section 1 which has the camera location detecting element 22 mentioned above, and a recording device, and drawing 10 (a) is the example displayed on the display 9 in the form put on map information with the gestalt which expresses the location of a user's camera section 1 by the round mark, and expresses bearing of the exposure axis by the arrow head. In addition, the image of the form put on map information with the gestalt which expresses a user's camera location by

the round mark, and expresses bearing of the exposure axis by the arrow head is realizable by the camera location detecting element 22 generating and applying the technique of a car-navigation system. In addition, this may be used, or this system may transmit to a camera the information inputted from the car-navigation system which in addition to the map information around the planned photography site memorizes sightseeing information etc. in the camera section 1 beforehand, or transmitted such information from the record playback section 2, and was connected to the input/output terminal 14 of the record playback section 2, and may carry out using this etc. In addition, this system may not have the map information on a background.

[0141] The camera section 1 as an example shown here has given a means specify the photography angle-type assignment means or other photography equipments which specifies a desired camera station and bearing of the exposure axis to a camera control unit 7, and the camera strange recovery section 8 has considered as the configuration equipped with the function which receives the radio signal from the camera concerned corresponding to assignment information according to the assignment information, and carries out the radio transmission of this to the record regenerative apparatus 2. Therefore, in this case, the record playback section 2 can receive the radio signal from the camera which is chosen as the above-mentioned assignment information response, and is sent, can get over, and can be recorded now on the Records Department 10.

[0142] Drawing 10 (b) is the example which attached the camera number for the location of the camera which is sending the radio signal currently exhibited around camera section 1, expressed bearing of the exposure axis as the arrow head, marked on a user's own camera section 1 in the form which surrounded the camera number "1" and the camera number of the camera chosen now by the round mark, and was displayed on the display 9.

[0143] Drawing 10 (c) is drawing explaining the example of photography in the hall of the athletic meet by the camera section 1 which has the camera location detecting element 22. As shown in this drawing, when photoing [from] the photographic subject which is running outside a game truck, in the camera section 1 which the user itself has, a photographic subject will become near or will separate in the distance. For example, if it sees from a certain camera so that it may understand after this, although the screen in the condition that the camera concerned was located in near [of a contestant] in time of day t when the image of the camera of a camera number "1" was made into the example, and the contestant went past beyond far at the event of time-of-day $t+n$ is shown, a photographic subject will become near or it will separate in the distance.

[0144] Such a situation is the same about other cameras, for example, the camera of "the camera number 5", even if just a stage is different.

[0145] Then, on the occasion of photography, the screen which displayed camera arrangement on the map like drawing 10 (b) is created and displayed on the display 9 of the camera section 1. By checking the location of other cameras of the camera section 1 circumference, and bearing of the exposure axis beforehand on this screen, and switching exactly the camera used for this record It enables it to record the image and voice of the attention photographic subject which moves like drawing 10 (d) as what was photoed from the location for which it was suitable as much as possible.

[0146] That is, like drawing 10 (b), the screen which displayed camera arrangement on the map is displayed, the location of other cameras of the camera section 1 circumference and bearing of the exposure axis are checked beforehand, and sequential selection assignment of the camera of the best location used for record is carried out by the camera control unit 7 with progress of a game. Thereby, the camera strange recovery section 8 carries out the radio transmission of the radio signal which received from the camera concerned corresponding to assignment information according to the assignment information to the record regenerative apparatus 2.

[0147] Therefore, the radio signal from the camera which the record playback section 2 is chosen as the above-mentioned assignment information response, and is sent will be received in this case, and it will get over, and will record on the Records Department 10, and the image and voice of the attention photographic subject which moves can be recorded now on the record playback section 2 as what was photoed from the location for which it was suitable as much as

possible.

[0148] In addition, even cases [stationary photography of a photographic subject not only in the photographic subject which moves but the various exhibitions on the stage etc.], two or more cameras can be arranged to the object response, and a camera can be recorded now on the object response as an image with change, such as camera angle and voice level, by carrying out selection assignment.

[0149] When it is the configuration which each camera has the camera location detecting element 22, and carries out wireless transmission of the detected camera positional information and bearing of the exposure axis with a video signal and a sound signal, moreover, in the camera section 1 A photography angle-type assignment means to specify a desired camera station and bearing of the exposure axis, and a means to receive the video signal in which other cameras carry out a radio transmission, and a sound signal, The camera station and a direction information extract means to extract said camera station and direction information from two or more received data which can be decoded, The inside of the camera station and direction information on each camera extracted with this camera station and direction information extract means, It considers as the configuration which established the camera station specified with the photography angle-type assignment means, and a means to choose at least one received data with this camera station and direction information similar to bearing of the exposure axis which can be decoded. If a desired camera station and bearing of the exposure axis are specified with the photography angle-type assignment means Said camera station and direction information extracted from the radio signal in which the decode of the radio signals from other cameras which the camera station and the direction information extract means extracted is possible are used. The video signal and sound signal with this camera station and direction information similar to the camera station specified with the photography angle-type assignment means among the camera station and direction information on each camera and bearing of the exposure axis of a radio signal can be chosen. By this by specifying a desired camera station and bearing of the exposure axis with a photography angle-type assignment means By the case where can choose a video signal and a sound signal with this camera station and direction information similar to a target camera station and bearing of the exposure axis, can present record now, and it is dotted with many cameras of a base When the image of each camera can be used, ID of a camera which has transmitted the video signal with this camera station and direction information similar to a target camera station and bearing of the exposure axis and the sound signal is sent to the image transcription playback section 2. If decode processing of the radio signal of a camera with the ID is carried out and it is made to make the Records Department record, the image corresponding to the story which chose the image suitable for the object and the user considers is adopted easily, and can be recorded on videotape.

[0150] The camera section 1 and the record playback section 2 are another objects, and although it is the configuration that between both is connected by the wireless circuit, if the above example can use not only a wireless circuit but a wire circuit for transfer of a signal, it is much more convenient. The example is explained below.

[0151] [Example 4] drawing 11 the camera section 1 and the record playback section 2 which have another object structure mutually It considers as the configuration which makes docking connection structurally. The video signal from the contemporary memory 6 of the camera section 1, The contact connector 23 which formed the sound signal in the camera section 1 and the record playback section 2, respectively is minded. In the record regenerative-signal processing section 13 of the record playback section 2 It is the block diagram showing the configuration of the this photography equipment and the recording apparatus which output the video signal from the record regenerative-signal processing section 13 of the record playback section 2, and a sound signal to the contemporary memory 6 of the camera section 1. In addition, since it was the same as that of the block diagram of drawing 1, the configuration of those other than record regenerative-signal processing section 13 of the contemporary memory 6 of the camera section 1 and the record playback section 2 was omitted.

[0152] When the transmission condition by wireless is bad by making it such a configuration, record by cable connection can be performed by between the camera section's 1 and the record

playback section 2 separating too much at the time of photography, and making the camera section 1 and the record playback section 2 dock later on, and transmitting a video signal and a sound signal, when it is not able to communicate. Moreover, since transmission by the cable is used, it also becomes possible to transmit a video signal and a sound signal to a high speed rather than a radio transmission.

[0153] In addition, in this example, it can also consider as the optical (infrared radiation is included) communication link connector which can connect the camera section 1 and the record playback section 2 instead of the contact connector 23. And in a configuration of providing the contact connector 23 and the optical-communication connector, actuation of the connector is forbidden during a radio transmission, and it is good during a connector joint to consider a means to forbid a radio transmission as the camera section 1 and the configuration included record playback section 2. Confusion by the operation mistake and malfunction of being as ordering it the communication link which used the connector for having not carried out a connector joint **** [, and] can be controlled. [carrying out not the communication link that used the connector during the connector joint but a radio transmission by this]

[0154] Moreover, an internal-storage means (the contemporary memory 6 may be used) to store temporarily the coded data of a video signal (and sound signal) is formed in the camera section 1. When a radio transmission or a connector joint becomes possible, it can also consider as the configuration which transmits the coded data stored temporarily for this internal-storage means to the record playback section 2. In this case, in the phase in which preparation of transmission was completed, promptly, since the transmission initiation of the data for transmission can be carried out, the efficient transmission processing without a time loss is attained.

[0155] In the configuration of this example 4, it performs rerecording the video signal and sound signal which were stored in the camera section 1 on the record playback section 2 later. And since are recording of this video signal and sound signal uses the contemporary memory 6, it becomes the point with the important storage capacity of the contemporary memory 6.

[0156] Drawing 12 is the block diagram showing the configuration whose contemporary memory 6 of the camera section 1 is a tape medium.

[0157] Thus, the amount of data of the video signal which can be stored temporarily, and a sound signal can be increased by using contemporary memory 6 of the camera section 1 as a cheap tape medium with large capacity compared with other record media.

[0158] By the way, the camera section 1 and the record playback section 2 are separated far away, and by the wireless electric wave of low-power output, if it is made to make radio signals, such as a video signal, a sound signal, and a control signal, relay through a repeater when transmission is impossible, or when there is an obstruction and the communication link between both cannot consider, it is cancelable in many cases. The example is explained as an example 5 below.

[0159] [Example 5] drawing 13 is drawing explaining the operation of this photography equipment transmitted to the record playback section 2 section of a remote place through the transmission network 25 to which it transmitted to the repeater 24 in which the radio signal from the camera strange recovery section 8 of the camera section 1 was prepared around camera section 1, and the repeater 24 was connected, and a recording device. In addition, since it was the same as that of the block diagram of drawing 1 , the configuration of those other than camera strange recovery section [of the camera section 1] 8, record regenerative-signal processing section [of the record playback section 2] 13, and input/output terminal 14 was omitted. Thus, a limit of the distance between the camera section 1 and the record playback section 2 is canceled by using the repeater 24 prepared around camera section 1.

[0160] Therefore, according to this invention, when there are two or more cameras, the image photoed not only with the image of a self camera but with other cameras is accommodated mutually, and the technique of the photography system which can be effectively used now can be built.

[0161] When the camera section 1 and the record playback section 2 are separated far away, an example 5 Although the transmission network 25 ties a house and the record playback section 2 put on office etc., install a repeater 24 in the range which the electric wave of the camera

section 1 reaches, this repeater 24 catches and relays the electric wave from the camera section 1, the record playback section 2 is passed and it is made to make it record When a course covers a long distance and it is moreover dotted with a camera along with a course like a marathon game If it is made to transmit to the record playback section 2, relaying the radio signal from each camera mutually between adjoining cameras, even if the radio-signal electric wave of each camera is low-power output, it will become possible to send simply radio signals, such as a video signal, a sound signal, and a control signal, to the record playback section 2. Below, the example is explained as an example 6.

[0162] [example 6] drawing 14 -- the camera section 1 and the record playback section 2 -- it is drawing showing the system configuration of this photography equipment at the time of it being alike, respectively and making the junction section 26 build in, and a recording device.

[0163] It the camera section 1 not only transmits the radio signal from the camera strange recovery section 8, but has another camera section 1 and the junction section 26 which relays the radio signal from the record playback section 2. Moreover, the record playback section 2 is also the configuration of having the same junction section 26 and having the function of transmission to everything but the regenerative signal in the incorporation to self and self of the radio signal from each camera section 1, and the function of the junction to everything but the radio signal which received.

[0164] Moreover, it is the configuration which can also perform the radio relay between the repeaters 24 connected to the transmission network 25 in the configuration of drawing 14 . In addition, since the configuration of those other than camera strange recovery section [of the camera section 1] 8, record regenerative-signal processing section [of the record playback section 2] 13, and junction section 26 was the same as that of the block diagram of drawing 1 , the publication in drawing 14 was omitted.

[0165] In the configuration of this example, by having the junction section 26 in each camera section 1 and the record playback section 2, each camera section 1 and the record playback section 2 can relay the received electric wave now, and each [these] camera section 1 and the record playback section 2 can constitute a wireless network network.

[0166] Therefore, when dotted with two or more camera sections 1, the radio signal which each camera section 1 outputs is relayed and transmitted in the adjoining camera section 1. And if the relayed radio signal reaches the record playback section 2 and is incorporated by the record playback section 2 concerned The video signal, sound signal which restored to it and obtained the radio signal in the record playback strange recovery section 12, About a video signal and a sound signal, it is given to the record regenerative-signal processing section 13 among control signals, and a video signal is changed into the record signal of dynamic-image compression methods, such as MPEG. It changes into the record signal which is a compression signal by the audio compression coding method about a sound signal, and the Records Department 10 is given. At the Records Department 10, the record signal from the record regenerative-signal processing section 13 is recorded on a record medium.

[0167] Thus, each camera can be utilized as a repeater, a radio signal can be relayed, and it can send now to the record playback section, even if it is an image from a distant camera, this can be recorded on videotape in the record playback section 2, and a limit of the distance between the camera section 1 and the record playback section 2 is canceled further. Therefore, according to this invention, when there are two or more cameras, the image photoed not only with the image of a self camera but with other cameras is accommodated mutually, and the technique of the photography system which can be effectively used now can be built.

[0168] As mentioned above, although various operation gestalten have been explained about this invention, it can carry out by necessarily not being limited to these and changing variously.

[0169] For example, you may enable it to guide operating instructions by the text displayed on voice and a display 9 from the voice section in actuation of the user in the camera section 1, the camera control unit 7 of the record playback section 2, and the record playback control unit 11.

[0170] Moreover, if a current electric-wave operating condition is investigated, an unassigned channel is chosen and it is made to present a communication link, congestion is avoided and it comes to be able to perform a smooth communication link in a radio transmission. The detection

means of the existence of the unassigned channel between a specific recording apparatus (or specific repeater) and photography equipment, and when an unassigned channel does not exist, specifically, a means to forbid a radio transmission is established and constituted in photography equipment or a specific recording apparatus (or specific repeater). And a radio transmission is forbidden, when an electric-wave operating condition current with a detection means is investigated, and an unassigned channel is chosen, it transmits using the selected channel and an unassigned channel does not exist, in case a radio transmission is carried out. Consequently, the situation where plurality transmits using the same channel, respectively is prevented, and a smooth communication link is attained.

[0171] Moreover, when a radio transmission is being interrupted and there is possibility of resumption of transmission, establish a means to output the electric wave for securing the channel for resumption of transmission on the outskirts, are in the middle of a communication link, and when having interrupted the communication link, it sets. The configuration which can output the electric wave for securing the activity channel on the outskirts, then when [a certain] interrupting a communication link for convenience' sake and waiting for a restart, it becomes possible to resume a communication link smoothly, without otherwise taking the channel which was being used for the communication link, having secured.

[0172] In addition, you may make it adjust the method of transmission, a transmission rate, image size, etc. suitably depending on a surrounding electric-wave condition.

[0173] moreover, to photography equipment or a specific recording device (or specific repeater) A detection means to detect the band between a specific recording device (or specific repeater) and photography equipment which can be transmitted. If the amount of coded data is controlled according to the detected band which can be transmitted, and it is the configuration which establishes a means to forbid a radio transmission when the band which can be transmitted is below a predetermined value The amount of data can be controlled and transmitted to the usable band response of the channel used for a communication link which can be transmitted. Since data transmission can be carried out at the highest transmission rate permitted, and also a radio transmission is forbidden when the band which can be transmitted is below a predetermined value, transmission whose transmission rate is too low can be avoided, and serves as a system in which an efficient communication link is possible.

[0174] Moreover, it is good for photography equipment or a specific recording device to establish the transmission situation to partner equipment, or the display means of the conditions which can be transmitted. Since the display information on a display means shows a transmission situation and the conditions which can be transmitted when it does in this way, for a user, it is kind and operability also becomes good much more.

[0175] Furthermore, when transmitting the video signal from this photography equipment and a recording apparatus, and a sound signal to a domestic video server etc. by connecting the input/output terminal 14 of the record playback section 2 to the public transmission network 25, image voice data can be efficiently accumulated a photography time exception, a photography location exception, according to a comment, etc. by including data, such as photography time, a location, and an easy comment, in a control signal.

[0176] In addition, in case the object for photography is recorded, you may make it the configuration which carries out a ** racking (record distribution). If it is made such a configuration, the playback for every truck and edit while looking at a representation image will be attained. If it is made to carry out the tracking of the image object by change of an image automatically on the occasion of this tracking, grasp in a short time of the outline by the extract of the edit point using the changing point of an image and playback of only a changing point etc. can be performed. moreover, if it constitutes so that the tracking for an image can be operated from a sender at hand, an intention (a truck is intentionally changed with significance etc.) of a photography person can be reflected in record, and it will become effective in the cut of the needlessness (significance -- low) image at the time of edit etc. Moreover, if it is made to carry out the tracking of the image object automatically with Camera ID (i.e., if tracking is carried out using the information the image from which camera it was), it is the recorded image, and it is effective when displaying only the thing from a camera at hand.

[0177]

[Effect of the Invention] As mentioned above, it sets to the photography equipment and the recording device of a method which it transmits [recording device] to a recording device on radio, and make the image which used photography equipment and a recording device as another object according to this invention as explained in full detail, and connected by the wireless circuit between both, and image pick-up equipment picturized record on it. It becomes possible to check the image recorded on the recording device by the photography equipment side, or to admire it. Moreover, even when photography equipment and a recording device are separated, become the system which is convenient in respect of mutual actuation, and also the signal between the camera section and the record playback section is set to the photography equipment and the recording device which carry out a radio transmission. The photography equipment and the recording device which can also use now the image from another camera which exists around a user, and voice can be offered.

[Translation done.]

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. *** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing for explaining this invention, and is the block diagram showing the example of a configuration of the photography equipment and the recording apparatus concerning the example 1 of this invention.

[Drawing 2] It is drawing for explaining this invention, and is drawing explaining the configuration which does not have the voice section in the camera section.

[Drawing 3] It is drawing for explaining this invention, and is drawing showing the format configuration of a radio signal which is used by this invention system, and by which a radio transmission is carried out.

[Drawing 4] It is drawing for explaining this invention, and the example of the configuration of the camera strange recovery section used by this invention system is shown.

[Drawing 5] It is drawing for explaining this invention, and is block drawing explaining the actuation in the case where the image from another camera and voice are used.

[Drawing 6] It is drawing for explaining this invention, and the example which divided the screen of a display into nine screens is shown.

[Drawing 7] It is drawing for explaining this invention, and is drawing showing the example which displayed the scene under record by the full screen, and took out the image of another camera with the child screen.

[Drawing 8] It is drawing for explaining this invention, and is the block diagram which has a camera location detecting element in the camera section.

[Drawing 9] It is drawing for explaining this invention, and is a block diagram in case a camera position signal is included in a radio signal.

[Drawing 10] It is drawing for explaining this invention, and is drawing explaining actuation by the camera section which has a camera location detecting element.

[Drawing 11] It is drawing for explaining this invention, and is the block diagram showing the configuration which outputs and inputs a video signal and a sound signal through a contact connector.

[Drawing 12] Contemporary memory is the block diagram showing the configuration which is a tape medium.

[Drawing 13] It is drawing for explaining this invention, and is drawing explaining the operation which transmits the radio signal from the camera section to a repeater, and is transmitted through a transmission network.

[Drawing 14] It is drawing for explaining this invention, and is drawing which prepares the junction section in the camera section and the record playback section, transmits a radio signal to a repeater, and explains the operation to transmit.

[Drawing 15] It is drawing for explaining the conventional technique, and is the block diagram showing the configuration of the conventional image pick-up equipment which separated the camera section and the record playback section.

[Description of Notations]

1 -- Camera section

2 -- Record playback section

3 -- Image pick-up section
4 -- Voice section
5 -- Camera signal-processing section
6 -- Contemporary memory
7 -- Camera control unit
8 -- Camera strange recovery section
9 -- Display
10 -- Records Department
11 -- Record playback control unit
12 -- Record playback strange recovery section
13 -- Record regenerative-signal processing section
14 -- Input/output terminal
15 -- Wireless receive section
16 -- Error judging section
17 -- Image coding section
18 -- Voice coding section
19 -- Multiplexing section
20 -- Wireless transmitting section
21 -- Another camera
22 -- Camera location detecting element
23 -- Contact connector
24 -- Repeater
25 -- Transmission network
26 -- Junction section
ANT1, ANT2 -- Antenna.

[Translation done.]

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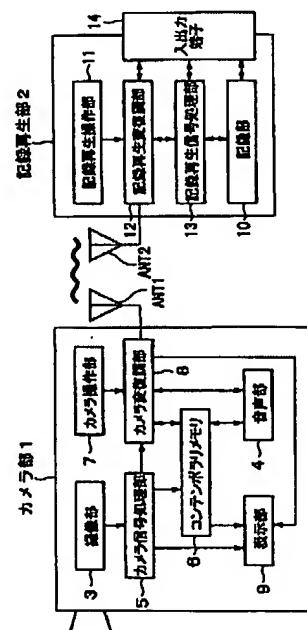
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(54)【発明の名称】 撮影記録システムおよび撮影装置および記録装置

(57)【要約】

【課題】記録装置に記録された映像を撮影装置側で観賞することができるようにして、また、撮影装置と記録装置が離れている場合でも、互いの操作の面で支障がないようにするシステムを提供すること。

【解決手段】撮像して得られる映像を電気信号化する撮像部3と、この撮像部にて得た映像信号を符号化する符号化手段8とを有し、符号化手段にて符号化された出力を記録装置に無線伝送する撮影装置1と、無線伝送された信号を復調して記録手段10に記録させる記録装置2とを備える撮影記録システムにおいて、記録装置には記録した信号を再生して無線送信する機能および受信無線信号による遠隔操作機能とを備えると共に、撮影装置には記録装置に対しての無線信号による遠隔操作機能と、受信した無線信号を復調する手段8と、復調した無線信号から得られる映像信号を表示する表示手段4とを備えることを特徴とする。



【特許請求の範囲】

【請求項1】撮像して得られる映像を電気信号化する撮像部と、この撮像部にて得た映像信号を符号化する符号化手段とを有し、符号化手段にて符号化された出力を、記録装置に無線伝送する撮影装置と、撮影装置より無線伝送された信号を復調して記録手段に記録させるようにした記録装置とを備える撮影記録システムにおいて、記録装置には記録した信号を再生して無線送信する機能および受信無線信号による遠隔操作機能とを備えると共に、撮影装置には記録装置に対しての無線信号による遠隔操作機能と、受信した無線信号を復調する手段と、復調した無線信号から得られる映像信号を表示する表示手段とを備えることを特徴とする撮影記録システム。

【請求項2】撮像して得られる映像を電気信号化する撮像部と、この撮像部にて得た映像信号を符号化する符号化手段とを有し、符号化手段にて符号化された出力を、記録装置に無線信号にて伝送する撮影装置において、特定記録装置以外の記録装置に対する受信無線信号の利用を規制するための無線信号公開／非公開を選択する選択手段と、無線信号を送受信できると共に前記符号化出力を前記選択した公開／非公開の情報と共に無線信号に変調して送信し、受信した無線信号を復調する変復調手段と、を備えることを特徴とする撮影装置。

【請求項3】送信データの記録を許可する対象の記録装置を指定する手段を具備し、許可した記録装置を特定する識別信号を撮影映像信号の符号化データと多重して、記録装置に無線伝送する構成とすることを特徴とする請求項2に記載の撮影装置。

【請求項4】請求項2または3いずれか1項に記載の撮影装置において、送信データに暗号化処理を施して出力する手段を設けると共に、無線信号の公開／非公開の選択に応じて、少なくとも一部の送信データを暗号化処理した出力と暗号化処理していない出力を選択して送信に供する構成とすることを特徴とする撮影装置。

【請求項5】撮影装置で撮影して得た撮影映像信号を符号化し、記録装置に無線伝送する撮影装置であって、特定記録装置と撮影装置の間の空きチャンネルの有無の検出手段と、

空きチャンネルが存在しない場合は、無線伝送を禁止する手段と、を備えることを特徴とする撮影装置。

【請求項6】撮影装置で撮影して得た映像信号を符号化し、記録装置に無線伝送する撮影装置であって、特定記録装置と撮影装置の間の伝送可能帯域の大きさを検出する検出手段と、

この検出した伝送可能帯域の大きさに応じて符号化データ量を制御し、伝送可能帯域が所定値以下の場合に無線伝送を禁止する手段と、を備えることを特徴とする撮影装置。

【請求項7】請求項5または6いずれか1項に記載の撮影装置において、特定記録装置への伝送状況または伝送可能条件の表示手段を備えることを特徴とする撮影装置。

【請求項8】請求項5乃至7いずれか1項に記載の撮影装置において、記録装置と接続可能な、光（赤外線を含む）通信コネクタまたは機械的電気的な接続のための接触コネクタを具備し、無線伝送中はそのコネクタの駆動を禁止し、コネクタ接続中は無線伝送を禁止する手段を備えることを特徴とする撮影装置。

【請求項9】請求項8記載の撮影装置において、撮影映像信号の符号化データを一時記憶する内部記憶手段を具備し、無線伝送またはコネクタ接続が可能になった時に、該内部記憶手段に一時記憶された符号化データを特定記録装置へ伝送する構成とすることを特徴とする撮影装置。

【請求項10】請求項2乃至8いずれか1項記載の撮影装置において、撮影装置の撮影位置と撮影方向を検出して撮影位置・方向情報を生成する手段を具備し、該撮影位置・方向情報を映像信号の符号化データと多重して、記録装置に無線伝送する構成とすることを特徴とする撮影装置。

【請求項11】請求項2乃至10いずれか1項記載の撮影装置において、撮影装置を特定する識別情報の生成手段を具備し、該識別情報を撮影映像信号の符号化データと多重して、記録装置に無線伝送する構成とすることを特徴とする撮影装置。

【請求項12】撮像して得られる映像を電気信号化する撮像部と、この撮像部にて得た映像信号（及び音声信号）を符号化する符号化手段とを有し、符号化手段にて符号化された出力を、記録装置に無線伝送する撮影装置において、

自己の位置と撮影方向を検出して撮影位置・方向情報を生成する撮影位置・方向情報生成手段と、所望の撮影位置と撮影方向を指定する撮影角度指定手段と、他の撮影装置が無線伝送する映像信号を受信する手段と、

復号可能な複数の受信データから前記撮影位置・方向情報を抽出する撮影位置・方向情報抽出手段と、この撮影位置・方向情報抽出手段にて抽出した各カメラの撮影位置・方向情報のうち、撮影角度指定手段にて指定した撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ受信データを選択する手段と、この選択した受信データの映像信号を受信すべく記録装置に指示する手段とを設けた構成とすることを特徴とする撮影装置。

【請求項13】請求項9記載の撮影装置において、

3 他の撮影装置を指定する指定手段と、
指定した他の撮影装置が無線伝送する撮影映像信号を受信、中継する手段と、を具備した構成とすることを特徴とする撮影装置。
【請求項14】撮影映像信号を符号化し、記録装置に無線伝送する撮影装置であって、
所望の撮影位置と撮影方向を指定する撮影アングル指定手段または他の撮影装置を指定する手段と、
当該手段による指定情報を特定記録装置に無線伝送する手段と、を具備したことを特徴とする撮影装置。
【請求項15】撮像して得られる映像を電気信号化する撮像部と、この撮像部にて得た映像信号を符号化する符号化手段とを有し、符号化手段にて符号化された出力を、記録装置に無線伝送する撮影装置と、撮影装置より無線伝送された信号を復調して記録手段に記録させるようにした複数の記録装置とを備える撮影記録システムにおいて、
各記録装置には記録した信号を再生して無線送信する機能および受信無線信号による遠隔操作する機能とを備えると共に、撮影装置には特定記録装置に対して再生指示を含む各種操作指示を無線信号により遠隔指示する機能と、この遠隔指示により特定記録装置が無線送信する前記記録した信号の再生信号を受信して復調する手段と、復調した無線信号から得られる映像信号を表示する表示手段とを備えることを特徴とする撮影記録システム。
【請求項16】無線伝送された撮影映像信号の符号化データを受信し、記録媒体に記録する画像記録装置であって、
受信データの公開／非公開の判別手段と、
公開された複数の受信データから少なくとも1つを選択する手段と、選択した受信データを記録する手段と、を具備したことを特徴とする記録装置。
【請求項17】無線伝送された映像信号の符号化データを受信し、記録媒体に記録する画像記録装置であって、少なくとも一部の符号化データが暗号化されているか否かを検出する手段と、
暗号解読可否の検出手段と、
暗号化されたデータを解読する暗号解読手段と、
解読可能な受信データが複数ある場合に所望のものを選択する手段と、
選択した受信データを記録する手段と、を具備したことを特徴とする記録装置。
【請求項18】請求項16または17いずれか1項記載の記録装置であって、撮影位置・方向情報を含む映像信号を複数チャンネル分受信可能な記録装置において、
所望の撮影位置と撮影方向を指定する撮影アングル指定手段と、
復号可能な複数の受信信号から前記撮影位置・方向情報を抽出する撮影位置・方向情報抽出手段と、
指定された撮影位置と撮影方向に類似する該撮影位置・50 方向情報を持つ復号可能な受信信号を選択する手段と、
を具備したことを特徴とする記録装置。
【請求項19】請求項16または17いずれか1項記載の記録装置において、
特定の撮影装置を指定する指定手段と、
指定した撮影装置が無線伝送する映像信号を受信、中継する手段と、を具備したことを特徴とする記録装置。
【請求項20】請求項16乃至19いずれか1項記載の記録装置において、
特定撮影装置が無線伝送する各種操作指令のための制御情報を抽出する手段と、
該制御情報に従って所望の撮影装置が無線伝送する符号化データを受信する手段と、を具備したことを特徴とする記録装置。
【請求項21】請求項16乃至19いずれか1項記載の記録装置において、
特定撮影装置が無線伝送する各種操作指令のための制御情報を抽出する手段と、
記憶した映像信号を該制御情報に従って再生する再生手段と、
再生した映像信号を無線伝送する手段とを具備し、
記憶した映像信号を制御情報に従って再生し無線伝送する構成とすることを特徴とする記録装置。
【請求項22】請求項16乃至20いずれか1項記載の記録装置において、
記録装置に、一時記憶手段を設けて、少なくとも1つの受信データを一時記憶できるようにし、複数台ある各撮影装置からの映像を任意に切り替えて録画に供する場合に、ある撮影装置の映像チャンネルから他の撮影装置の映像チャンネルに切り替える指定をすると、その新たに切り替えるチャンネルの映像の受信データを一時記憶手段に記憶開始し、切り替え前のチャンネルの受信データの所定単位の記録終了後に、一時記憶手段に記憶した受信データの読み出しを開始して所定位置からの記録を可能にする構成とすることを特徴とする記録装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、ビデオカメラ、映像信号記録再生装置（ビデオレコーダ）に係わり、特に、カメラ部と記録再生部とを別体化すると共に、この別体化されているカメラ部・記録再生部間での信号授受を無線伝送により行うことができるようとした撮影記録システムおよび撮像装置および記録装置に関する。

【0002】

【従来の技術】8ミリビデオカメラなどに代表されるカメラ一体型ビデオテープレコーダは、小型軽量化されたことにより、広く普及している。しかしながら、従来のビデオカメラには、カメラ機構部（この場合は撮像部）と記録再生部、そして、電源部が一体化されているために、いくら小型軽量化されたとは云え、十分な軽量化が

進んでいるわけではなく、しかも、長時間に亘りカメラを構えて撮影することになるので、使用者にとって手や腕への負担は大きい。また、装置全体の消費電力や記録媒体の記録容量に關係するバッテリ電源や記録媒体の交換の煩わしさなどの問題と、使用者自身が撮影した映像しか記録できないという制限がある。

【0003】そこで、撮影装置と記録装置を別体化すると云う試みが成されている。例をあげると、たとえば特開平9-116797号公報、特開平9-205571号公報、特開平9-238296号公報に開示されている如きの技術であって、カメラ機構部分と記録再生部を分離し、映像信号、音声信号を有線、あるいは無線伝送する図15に示す如きのシステムとする構想である。

【0004】そして、これらの提案技術により、カメラ部分の小型軽量化による使用者への負担解消、低消費電力化、記録再生部の装置サイズの制限緩和による長時間記録の途が拓かれるようになった。

【0005】

【発明が解決しようとする課題】しかしながら、撮影装置と記録装置を別体とし、両者間は無線回線により接続して撮影装置の撮像した映像を記録装置に無線で送信して記録させるだけでは、撮影装置側では、その記録した映像の確認や観賞をすることができず、撮影装置と記録装置を遠く離した場合には、互いの操作の面で更に使い勝手が悪くなる。

【0006】また、例えば、イベント開催時における街頭や運動会などの各種会場には、多数のビデオカメラ、監視カメラなどが存在するにも係わらず、使用者が記録できる映像、音声は使用者自身のカメラからのものに限られたままである。

【0007】そのため、例えば、運動会での撮影場面を一つを考えてみても、会場内での撮影ポイントの確保、場所の移動が絶えずつきまと、せっかく確保したベストポイントといえども、トラック競技などになれば、それはほんの一瞬におけるベストポイントに過ぎない。例えば、スタート地点と、ゴール地点が遠く離れていたとすると、ゴール地点に撮影ポイントを選んだ人は、スタート地点近傍での出場者の撮影は難しく、また、スタート地点に撮影ポイントを選んだ人は、ゴール地点近傍での出場者の撮影は難しいと云った具合である。

【0008】図15に示した技術は、カメラ部からの映像を遠方の記録再生部に伝送することを可能にしているので、同じ目的を以て会場に集まり、種々のポイントで撮影を行っている多数のビデオカメラの各映像を互いに融通し合い、有効かつ手軽に利用できるようにする技術の開発が必要である。

【0009】そこで、この発明の目的とするところは、第1には、撮影装置と記録装置を別体とし、両者間は無線回線により接続して撮影装置の撮像した映像を記録装置に無線で送信して記録させる方式の撮影装置及び記録

装置において、記録装置に記録された映像を撮影装置側で確認したり、観賞したりすることができるようにして、また、撮影装置と記録装置が離れている場合でも、互いの操作の面で支障がないようにするシステムを提供することにあり、また、第2にはカメラ部と記録再生部間の信号を無線伝送する撮影装置および記録装置において、使用者の周辺に存在する別のカメラからの映像、音声を利用できるようにした撮影装置および記録装置を提供することにある。

【0010】
【課題を解決するための手段】上記目的を達成するためには、本発明は次のように構成する。すなわち、

(1) 第1の発明は、撮像して得られる映像を電気信号化する撮像部と、この撮像部にて得た映像信号(及び音声信号)を符号化する符号化手段とを有し、符号化手段にて符号化された出力を、記録装置に無線伝送する撮影装置と、撮影装置より無線伝送された信号を復調して記録手段に記録させるようにした記録装置とを備える撮影記録システムにおいて、記録装置には記録した信号を再生して無線送信する機能および受信無線信号による遠隔操作機能とを備えると共に、撮影装置には記録装置に対しての無線信号による遠隔操作機能と、受信した無線信号を復調する手段と、復調した無線信号から得られる映像信号を表示する表示手段とを備える構成とする。

【0011】このように、撮影装置と記録装置を別体とし、両者間は無線回線により接続して両者を別体化したことによる撮影装置の小型軽量化のメリットが確保できる他、遠隔操作可能にして、遠方にあっても記録装置を自在に操作できるようにして別体構成による不便を解消し、また、記録装置に記録した映像等を撮影装置側でモニタしたり、観賞したりすることが可能になって、撮影装置と記録装置が離れていることによる不便も解消できるようになる。

【0012】(2) 第2の発明は、撮像して得られる映像を電気信号化する撮像部と、この撮像部にて得た映像信号(及び音声信号)を符号化する符号化手段とを有し、符号化手段にて符号化された出力を、記録装置に無線伝送する撮影装置において、特定記録装置以外の記録装置に対する受信無線信号の利用を規制するための無線信号公開/非公開を選択する選択手段と、無線信号を送受信できると共に前記符号化出力を前記選択した公開/非公開の情報と共に無線信号に変調して送信し、受信した無線信号を復調する変復調手段とを備える。このような構成によれば、無線伝送場所周辺に位置する特定記録装置以外の記録装置に対して、自己の送信する無線信号の公開/非公開を選択することができ、公開の場合には自己の送信する無線信号の不特定多数の記録装置での受信とその伝送信号内容を観賞および記録に供することを可能にし、非公開のときは、これを禁止状態にできる。

従って、本発明によれば、カメラが複数台ある場合に、

自己のカメラの映像ばかりでなく、他のカメラで撮影した映像を互いに融通し合い、有効に利用できるようになる撮影システムの技術が構築できる。

【0013】(3) 第3の本発明は、上記(2)項の撮影装置において、送信データの記録を許可する対象の記録装置を指定する手段を具備し、許可した記録装置を特定する識別信号を映像信号(及び音声信号)の符号化データと多重して、記録装置に無線伝送する構成とすることを特徴とする。このような構成によれば、無線伝送場所周辺に位置する特定記録装置以外の指定する複数の記録装置に対して、自己の送信する無線信号の公開/非公開を選択することができ、公開の場合には自己の送信する無線信号の特定多数の記録装置での受信とその伝送信号内容を観賞および記録に供することを可能にし、非公開のときは、これを禁止状態にできる。従って、本発明によれば、カメラが複数台ある場合に、自己のカメラの映像ばかりでなく、他のカメラで撮影した映像を互いに融通し合い、有効に利用できるようになる撮影システムの技術が構築できる。

【0014】(4) 第4の本発明は、上記(2)項または(3)項の撮影装置において、送信データに暗号化処理を施して出力する手段を設けると共に、無線信号の公開/非公開の選択に応じて、少なくとも一部の送信データを暗号化処理した出力と暗号化処理していない出力を選択して送信に供する構成とする。このような構成においては、送信データに暗号化処理を施して出力する手段を設け、この暗号化処理出力手段の出力と暗号化処理していない出力を選択する手段とを設けて、無線信号の非公開のときは暗号化処理出力手段の出力を選択して、これを無線信号で送信し、公開のときは暗号化処理していない出力を選択して、これを無線信号で送信する。そして、特定の記録装置に暗号化解読処理手段を設けて、暗号化してある無線信号の受信時には、この暗号化解読処理手段を通して解読処理を施すことで、特定の記録再生装置にのみ、映像信号や音声信号を受け渡すことができるようになる。

【0015】(5) 第5の本発明は、撮影装置で撮影して得た映像信号(及び音声信号)を符号化し、記録装置に無線伝送する撮影装置であって、特定記録装置(または特定中継器)と撮影装置の間の空きチャネルの有無の検出手段と、空きチャネルが存在しない場合は、無線伝送を禁止する手段を含む撮影装置の構成とする。

【0016】無線伝送するにあたっては、検出手段は、現在の電波使用状況を調べ、空きチャネルを選択してその選択チャネルを用いて通信を行うようとする。また、空きチャネルが存在しない場合は、無線伝送を禁止する。このようにすると、輻輳を避けて、円滑な通信ができるようになる。

【0017】(6) 第6の本発明は、撮影装置で撮影して得た映像信号(及び音声信号)を符号化し、記録装

置に無線伝送する撮影装置であって、特定記録装置(または、特定中継器)と撮影装置の間の伝送可能帯域の大きさを検出手段と、この検出した伝送可能帯域の大きさに応じて符号化データ量を制御し、伝送可能帯域が所定値以下の場合に無線伝送を禁止する手段を含む撮影装置の構成とする。このような構成にすると、通信に利用するチャネルの使用可能な伝送可能帯域の容量に対応し、データ量を制御して伝送することができ、許容される最高の伝送レートでデータ送信することができるほか、伝送可能帯域の容量が所定値以下の場合に無線伝送を禁止するので、低すぎる伝送レートでの伝送は回避でき、非効率な伝送を避けることができ、伝送にあたっては常に効率の良い通信が可能なシステムとなる。

【0018】(7) 第7の本発明は、上記(5)項または(6)項の撮影装置において、特定記録装置への伝送状況または伝送可能条件の表示手段を具備した構成とする。この場合、特定記録装置への伝送状況や伝送可能条件が表示手段の表示情報からわかるので、操作性が良くなる。

【0019】(8) 第8の本発明は、上記(5)項乃至(7)項の撮影装置において、記録装置と接続可能な、光(赤外線を含む)通信コネクタまたは機械的電気的な接続のための接触コネクタを具備し、無線伝送中はそのコネクタの駆動を禁止し、コネクタ接続中は無線伝送を禁止する手段を含む構成とする。これにより、接触コネクタや光通信コネクタを具備している構成の場合に、無線伝送中はそのコネクタの駆動を禁止し、コネクタ接続中は無線伝送を禁止するので、コネクタ接続中にコネクタを利用した通信ではなく、無線伝送をしてしまったり、コネクタ接続していないのにコネクタを利用した通信を指令してしまったりという誤操作や誤動作を抑制できる。

【0020】(9) 第9の本発明は、上記(8)項の撮影装置において、映像信号(及び音声信号)の符号化データを一時記憶する内部記憶手段を具備し、無線伝送またはコネクタ接続が可能になった時に、該内部記憶手段に一時記憶された符号化データを特定記録装置へ伝送する構成とする。この場合、伝送の準備が整った段階で直ちに、伝送対象のデータを伝送開始できるので、タイムロスの無い効率的な伝送処理が可能になる。

【0021】(10) 第10の本発明は、上記(2)項乃至(8)項の撮影装置において、撮影装置の撮影位置と撮影方向を検出して撮影位置・方向情報を生成する手段を具備し、該撮影位置・方向情報を映像信号(及び音声信号)の符号化データと多重して、記録装置に無線伝送する構成とする。この結果、映像信号を送信してきた撮影装置の撮影位置と方向がわかるので、多数の撮影装置から映像信号を受けて、それらを適宜に利用する場合に、目的に合う利用ができるようになり、使い勝手が良くなる。

【0022】(11) 第11の本発明は、上記(2)項乃至(10)項の撮影装置において、撮影装置を特定する識別情報の生成手段を具備し、該識別情報を撮影映像信号(及び音声信号)の符号化データと多重して、記録装置に無線伝送する構成とする。カメラID(識別情報)を含めて情報を無線伝送することにより、受信側では特定の撮影装置からの無線信号を認識できるようになるので、記録させるべき撮影装置のIDを送って記録装置側に保持させるようにし、かつ、この状態では、保持したID情報を持つ撮像装置からの無線信号から得られる映像信号、音声信号を記録させると、多数台の撮像装置で撮像している場合には目的の撮像装置の映像をチャンスを失うことなく記録装置に記録させることができるようになる。

【0023】(12) 第12の本発明は、撮像して得られる映像を電気信号化する撮像部と、この撮像部にて得た映像信号(及び音声信号)を符号化する符号化手段とを有し、符号化手段にて符号化された出力を、記録装置に無線伝送する撮影装置において、自己の位置と撮影方向を検出して撮影位置・方向情報を生成する撮影位置・方向情報生成手段と、所望の撮影位置と撮影方向を指定する撮影アングル指定手段と、他の撮影装置が無線伝送する映像信号(及び音声信号)を受信する手段と、復号可能な複数の受信データから前記撮影位置・方向情報を抽出する撮影位置・方向情報抽出手段と、この撮影位置・方向情報抽出手段にて抽出した各カメラの撮影位置・方向情報のうち、撮影アングル指定手段にて指定した撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ復号可能な受信データを選択する手段と、この選択した受信データの映像信号(及び音声信号)を受信すべく記録装置に指示する手段とを設けた構成とする。このシステムは、撮影装置と記録装置を別体とし、両者間は無線回線により接続して両者を別体化したことによる撮影装置の小型軽量化のメリットが確保できる。また、各撮影装置では撮影位置・方向情報生成手段を有して自己の位置と撮影方向を検出し、撮影位置・方向情報を生成する。そして、その生成した撮影位置情報と撮影方向とを映像信号や音声信号と共に無線送信する。撮影装置には、撮影アングル指定手段があり、これにより所望の撮影位置と撮影方向を指定すると、選択手段は、他の撮影装置が無線伝送する映像信号、音声信号のうち、復号可能な複数撮影装置からの受信信号から撮影位置・方向情報抽出手段は前記撮影位置・方向情報を抽出して、その抽出した各カメラの撮影位置・方向情報のうち、撮影アングル指定手段にて指定した撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ撮影装置からの受信信号を選択する。このように、撮影アングル指定手段にて所望の撮影位置と撮影方向を指定しておくと、撮影位置・方向情報抽出手段が抽出した他の撮影装置からの無線信号のうちの復号可能な無線信号から抽出した前記撮影

位置・方向情報を用いて、各撮影装置の撮影位置・方向情報のうち、撮影アングル指定手段にて指定した撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ無線信号の映像信号と音声信号を選択するようできる。そして、撮影装置はこの選択した無線信号の映像信号(及び音声信号)を記録装置に記録させるように指示する。これにより、撮影アングル指定手段にて所望の撮影位置と撮影方向を指定すれば目的の撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ映像信号と音声信号を選択して記録に供することができるようになり、多数台の撮影装置が点在する場合で、各撮影装置の映像を利用できる場合に、目的の撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ映像信号と音声信号を記録装置に記録させることで、目的に合った映像を選択して使用者の考えているストーリに見合う映像を容易に取り入れて録画できるようになる。

【0024】(13) 第13の本発明は、上記(9)項の撮影装置において、他の撮影装置を指定する指定手段と、指定した他の撮影装置が無線伝送する映像信号を受信、中継する手段を具備した構成とする。これにより、使用者の撮影装置では指定手段での指定情報に従って当該指定情報対応の撮影装置から受信した無線信号を記録再生装置に中継して無線伝送することになり、記録再生装置は上記指定情報対応に選択されて送られてくる撮影装置からの無線信号を受信して復調し、記録することになって、移動する注目被写体の映像や音声を、できるだけ適した位置から撮影した映像を記録できるようになる。

【0025】(14) 第14の本発明は、映像信号(及び音声信号)を符号化し、記録装置に無線伝送する撮影装置であって、所望の撮影位置と撮影方向を指定する撮影アングル指定手段または他の撮影装置を指定する手段と、その指定情報を特定記録装置に無線伝送する手段を具備した撮影装置の構成とする。これにより、撮影装置では撮影アングル指定手段での指定情報に従って当該指定情報対応の撮影装置から受信した無線信号を記録装置に無線伝送することになり、記録装置は上記指定情報対応に選択されて送られてくる撮影装置からの無線信号を受信して復調し、記録することになって、舞台上の各種発表会などにおける静止した被写体の撮影などの場合でも、複数のカメラを目的対応に配置して、目的対応にカメラを選択指定することで、カメラアングルや音声レベルなどの変化のある映像として記録することができるようになる。

【0026】(15) 第15の本発明は、撮像して得られる映像を電気信号化する撮像部と、この撮像部にて得た映像信号(及び音声信号)を符号化する符号化手段とを有し、符号化手段にて符号化された出力を、記録装置に無線伝送する撮影装置と、撮影装置より無線伝送された信号を復調して記録手段に記録させるようにした複数

の記録装置とを備える撮影記録システムにおいて、各記録装置には記録した信号を再生して無線送信する機能および受信無線信号による遠隔操作する機能とを備えると共に、撮影装置には特定記録装置に対して再生指示を含む各種操作指示を無線信号により遠隔指示する機能と、この遠隔指示により特定記録装置が無線送信する前記記録した信号の再生信号を受信して復調する手段と、復調した無線信号から得られる映像信号を表示する表示手段とを備える構成とする。本システムは記録装置と撮影装置は別体になっているが、撮影装置から記録装置には遠隔操作が可能であり、撮影装置から特定の記録装置に対して再生指示を遠隔指示により行うと、その特定記録装置が再生動作を実施して、その特定記録装置に記録してある信号を再生し、無線送信するので、撮影装置ではこの無線送信された信号を受信して復調し、得られる映像信号を表示手段に表示することにより、指示した記録装置の記録映像を撮影装置側で見ることができる。故に、使い勝手の良いシステムとなる。

【0027】(16) 第16の本発明は、無線伝送された撮影映像信号の符号化データを受信し、記録媒体に記録する記録装置であって、受信データの公開／非公開の判別手段と、公開された複数の受信データから少なくとも1つを選択する手段と、選択した受信データを記録する手段を具備した記録装置の構成とする。このような構成によれば、無線伝送場所周辺に位置する特定記録装置以外の複数の記録装置に対して、撮影装置の送信する無線伝送信号に公開／非公開が設定してあれば、その設定情報から記録装置は、公開の場合には受信データを取り込んで記録することができるが、公開の設定情報を有する無線信号が複数ある場合でも、選択して受信データを記録することができるようになる。従って、本発明によれば、撮影装置が複数台ある場合に、送信しているデータが公開となっているうちの、所望の撮影装置で撮影した映像を記録できるようになって、目的のシナリオに沿った映像を記録できるようになる。

【0028】(17) 第17の本発明は、無線伝送された映像信号の符号化データを受信し、記録媒体に記録する記録装置であって、少なくとも一部の符号化データが暗号化されているか否かを検出する手段と、暗号解読可否の検出手段と、暗号化されたデータを解読する暗号解読手段と、解読可能な受信データが複数ある場合に所望のものを選択する手段と、選択した受信データを記録する手段を具備した記録装置の構成とする。本発明によれば、暗号化されたデータとして送信されてきたデータについて、解読可能なものを選択して記録することができる。

【0029】(18) 第18の本発明は、上記(16)項または(17)項記載の記録装置であって、撮影位置・方向情報を含む映像信号(及び音声信号)を複数チャンネル分受信可能な記録装置において、所望の撮影位置と撮

影方向を指定する撮影アングル指定手段と、復号可能な複数の受信信号から前記撮影位置・方向情報を抽出する撮影位置・方向情報抽出手段と、指定された撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ復号可能な受信信号を選択する手段とを具備した構成とする。このような構成において、例えば、複数の撮影装置からそれぞれ撮影位置と撮影方向情報を含む撮影映像信号(及び音声信号)が記録装置に無線伝送されるような場合に、撮影アングル指定手段により所望の撮影位置と撮影方向を指定すると、撮影位置・方向情報抽出手段は無線伝送されて来る映像信号、音声信号から前記撮影位置・方向情報を抽出して、選択手段は、その抽出した各撮影装置の撮影位置・方向情報のうち、撮影アングル指定手段にて指定した撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ撮影装置からの受信信号を選択する。そして、この選択した無線信号の映像信号(及び音声信号)を記録する。このように撮影アングル指定手段にて所望の撮影位置と撮影方向を指定することで、目的の撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ映像信号と音声信号を選択して記録に供することができるようになり、多数台の撮影装置が点在する場合で、各撮影装置の映像を利用できる場合に、目的の撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ映像信号と音声信号を記録装置に記録することで、目的に合った映像を選択して使用者の考えているストーリーに見合う映像を容易に取り入れて録画できるようになる。

【0030】(19) 第19の本発明は、上記(16)項または(17)項記載の記録装置において、特定の撮影装置を指定する指定手段と、指定した撮影装置が無線伝送する撮影映像信号を受信、中継する手段を具備した構成とする。これにより、記録装置側では指定手段での指定情報に従って当該指定情報対応の撮影装置から受信した無線信号を受信して無線伝送のために中継することになり、特定の撮影装置が離れていても、その出力する無線信号を中継して遠方に届けることができるようになる。

【0031】(20) 第20の本発明は、上記(16)項乃至(19)項記載の記録装置において、特定撮影装置が無線伝送する各種操作指令のための制御情報を抽出する手段と、該制御情報に従って所望の撮影装置が無線伝送する符号化データを受信する手段とを具備する構成とする。特定撮影装置から無線信号で送られてくる各種操作指令のための制御情報、例えば、無線信号の“記録開始／終了”といった操作制御情報を、抽出手段が抽出する。そして、所望の撮影装置からの符号化データを該制御情報に従って受信する。この結果、使用者の考えているストーリーに見合う映像を遠隔操作により容易に取り込んで録画できるようになる。

【0032】(21) 第21の本発明は、上記(16)項乃至(19)項記載の記録装置において、特定撮影装置が

無線伝送する各種操作指令のための制御情報を抽出する手段と、記憶した映像信号を該制御情報に従って再生する再生手段と、再生した映像信号を無線伝送する手段とを具備し、記憶した映像信号を制御情報に従って再生し無線伝送する構成とする。特定撮影装置から無線信号で送られてくる各種操作指令のための制御情報、例えば、記憶した信号の“再生”、“早送り”、“巻き戻し”、“一時停止”といった操作制御情報を、抽出手段が抽出する。そして、記憶した映像信号を該制御情報に従って再生したり、巻き戻したりし、再生した映像信号は無線信号として送信する。この無線信号は、使用者の持つ撮影装置が、無線信号の受信機能と、受信した無線信号を復調して表示する機能を備えていれば、使用者の手元の撮影装置でこの映像を観賞できる。この結果、記録装置が使用者の居場所から遠く離れていても遠隔操作により容易に録画内容を確認できて操作性が向上する。

【0033】(22) 第22の本発明は、上記(16)項乃至(20)項記載の記録装置において、記録装置に、一時記憶手段を設けて、少なくとも1つの受信データを一時記憶できるようにし、複数台ある各撮影装置からの映像を任意に切り替えて録画に供する場合に、ある撮影装置の映像チャンネルから他の撮影装置の映像チャンネルに切り替える指定をすると、その新たに切り替えるチャンネルの映像の受信データを一時記憶手段に記憶開始し、切り替え前のチャンネルの受信データの所定単位の記録処理が終了した後に、一時記憶手段に記憶した受信データの読み出しを開始して所定位置(つまり、所望場面)からの記録を可能にする構成とする。この構成によれば、あるチャンネルから別のチャンネルに録画を切り替える際に、すなわち、録画対象をある撮影装置の映像から別の撮影装置の映像に切り替える際に、切り替えに伴うタイムラグを解消して、目的の映像シーンを録画し損なうことなく、全て録画することができるようになる。

【0034】以上のように、本発明によれば、撮影装置と記録装置を別体とし、両者間は無線回線により接続して撮影装置の撮像した映像を記録装置に無線で送信して記録させる方式の撮影装置及び記録装置において、記録装置に記録された映像を撮影装置側で確認したり、観賞したりすることができるようになり、また、撮影装置と記録装置が離れている場合でも、互いの操作の面で支障がないようにするシステムを提供することができ、また、カメラが複数台ある場合に、自己のカメラの映像ばかりでなく、他のカメラで撮影した映像を互いに融通し合い、有効に利用できるようになる撮影システムの技術が構築できる。

【0035】

【発明の実施の形態】以下、本発明の実施の形態について図面を参照して説明する。

【0036】【具体例1】具体例1に示す構成は、本発

明システムとしての基本構成を示すものであって、撮影装置(カメラ部)と記録装置(記録再生部)を別体とし、両者間は無線回線により双方向接続すると共に、撮影装置と記録装置は、それぞれに設けた操作部の操作により、互いに遠隔操作を可能にしており、また、撮影装置で撮影してその映像等を記録装置に送って記録させ、その映像を再生して撮影装置側に送って撮影装置でモニタすると云ったことができるようにしてある。

【0037】すなわち、撮影装置と記録装置を別体とし、両者間は無線回線により接続して両者を別体化したことによる従来のメリットを踏襲するだけでなく、両者をそれぞれが遠隔操作可能にして、遠方にあっても相手装置を自在に操作できるようにして別体になっていることによる不便を解消し、また、記録装置に記録した映像等を撮影装置側でモニタしたり、観賞したりすることを可能にして撮影装置と記録装置が離れていることによる不便も無いようにする。

【0038】以下、詳細を説明する。図1は、具体例1としての本発明に係る撮影装置および記録装置を示すブロック図である。図に示すように、本撮影装置および記録装置は、別体化されたカメラ部1と記録再生部2とを有し、カメラ部1と記録再生部2間の信号を双方向に無線伝送する構成になっている。

【0039】これらのうち、カメラ部1は、撮像部3と、音声部4と、カメラ信号処理部5と、コンテンポラリメモリ6と、カメラ操作部7と、カメラ変復調部8と、表示部9およびアンテナANT1を備えて構成される。

【0040】また、記録再生部2は、記録部10と、記録再生操作部11と、記録再生変復調部12と、記録再生信号処理部13と、入出力端子14およびアンテナANT2を備えて構成される。

【0041】カメラ部1の構成要素である音声部4は、マイクロフォン、スピーカなどから構成されていて、音声の入出力を行うためのものであり、撮像部3は、レンズ等の光学系と、CCD(固体撮像素子)などの撮像素子と、撮像素子駆動回路などから構成されていて、被写体を撮像するためのものである。カメラ部1の構成要素であるカメラ信号処理部5は、撮像部3からの信号をアナログ、あるいはデジタルの映像信号に変換するものである。

【0042】また、カメラ部1の構成要素であるコンテンポラリメモリ6はカメラ部1における映像信号、音声信号を一時的に記憶するためのものであって、例えば、大容量の半導体メモリなどから成る。カメラ部1の構成要素であるカメラ操作部7は、カメラ部1および記録再生部2の各種操作とその操作に伴う必要な制御信号を生成するためのものであって、カメラ部1および記録再生部2における“撮影開始/終了”、“ズームイン/ズームアウト”、無線信号の“送信開始/終了”、“記録開

始／終了”、コンテンポラリメモリ6に記憶している映像信号、音声信号の“再生”、“早送り”、“巻き戻し”、“一時停止”などの操作制御、そして、記録再生部2の記録部10に記憶している映像信号、音声信号の“再生”、“早送り”、“巻き戻し”、“一時停止”などの操作制御をカメラ部1側から行うための制御信号を生成するためのものである。

【0043】また、カメラ部1の構成要素であるカメラ変復調部8は、カメラ部1における映像信号、音声信号、制御信号を無線信号に変換してアンテナANT1により空中に送信し、また記録再生部2からの無線信号をアンテナANT1を介して受信して映像信号、音声信号、制御信号に変換するためのものであり、表示部9はカメラ信号処理部5、カメラ変復調部8、コンテンポラリメモリ6からの映像信号を画面表示するLCD(液晶)モニタのようなディスプレイである。

【0044】また、記録再生部2の構成要素である記録再生操作部11は、カメラ部1および記録再生部2の各種操作とその操作に伴う必要な制御信号を生成するためのものであって、カメラ部1および記録再生部2における“撮影開始／終了”、“ズームイン／ズームアウト”、無線信号の“送信開始／終了”、“記録開始／終了”、コンテンポラリメモリ6に記憶している映像信号、音声信号の“再生”、“早送り”、“巻き戻し”、“一時停止”などの操作制御、そして、記録再生部2の記録部10に記憶している映像信号、音声信号の“再生”、“早送り”、“巻き戻し”、“一時停止”などの操作制御をカメラ部1側から行うための制御信号を生成するためのものである。

【0045】また、記録再生部2の構成要素である記録再生変復調部12は、カメラ部1からの無線信号を受信して元の映像信号、音声信号、制御信号に戻して取り込み、また、映像信号、音声信号、制御信号を無線信号に変換して送信するためのものであり、記録再生信号処理部13は、記録再生変復調部12で変換された映像信号、音声信号をメディア統合系動画像圧縮の国際標準であるMPEG(Moving Picture Experts Group)などの動画像圧縮方式、オーディオ圧縮符号化方式による圧縮信号である記録信号に変換し、また記録信号を映像信号や音声信号に復元する処理を行うためのものである。

【0046】また、記録再生部2の構成要素である記録部10は、記録再生信号処理部13からの記録信号を記録媒体(例えば、磁気テープ、半導体メモリ、ハードディスク、光磁気ディスク、光ディスクなど)に記録し、また記録媒体に記録してある記録信号を読み出して出力するものであり、入出力端子14は、記録再生変復調部12、記録再生信号処理部13からの映像信号、音声信号、制御信号、記録信号を記録再生部2の外部に出力し、あるいは他の装置から映像信号、音声信号、制御信号、

号、記録信号を記録再生部2に入力するためのものである。

【0047】このような構成の本システムは、カメラ部1と記録再生部2とは別体になっており、カメラ部1で撮像した映像は無線伝送により記録再生部2に送られて、記録される。

【0048】<カメラ部1側からのカメラ部1と記録再生部2を操作例>カメラ部1の構成要素であるカメラ操作部7を操作することにより、カメラ部1および記録再生部2の各種操作を行うことができる。例えば、カメラ部1および記録再生部2における“撮影開始／終了”、カメラ部1の光学系の“ズームイン／ズームアウト”操作、無線信号の“送信開始／終了”、“記録開始／終了”、コンテンポラリメモリ6に記憶している映像信号、音声信号の“再生”、“早送り”、“巻き戻し”、“一時停止”などの操作制御、そして、記録再生部2の記録部10に記憶している映像信号、音声信号の“再生”、“早送り”、“巻き戻し”、“一時停止”などの操作制御をカメラ部1側から行うことができる。

【0049】従って、使用者がカメラにより像を撮影する場合、カメラ部1におけるカメラ操作部7を“撮影開始”操作することになる。

【0050】“撮影開始”操作が成されるとそのための制御信号がカメラ操作部7から出力される結果、カメラ部1においては、光学系を介して捉えた被写体像は撮像部3において電気信号に変換され、カメラ信号処理部5に送られて、ここでこの電気信号はアナログ、あるいはディジタルの映像信号に変換される。そして、この映像信号はカメラ部1の持つ表示部9に画像として表示される。

【0051】また、音声部4は、周囲の音声をとらえて電気信号に変換し、コンテンポラリメモリ6に入力する。また、カメラ信号処理部5から出力された映像信号はコンテンポラリメモリ6にも入力され、このコンテンポラリメモリ6はこの映像信号や、音声部4からの音声信号を一定時間分、一時的に記憶する。この記憶は一定時間分を逐次更新記録する形態とすることもできる。

【0052】従って、これを再生して表示部9に表示し、内容を確かめたり、観賞したり、あるいは記録再生部2に送信して記録させたりすることもでき、これは更新時間の範囲内ならばタイムディレイを以て実施可能である。また、コンテンポラリメモリ6の保持する映像信号や音声信号の送信ばかりでなく、カメラ信号処理部5から出力される現在撮影中の映像の映像信号や音声部4の捉えた生の音声の信号を記録再生部2に送信して記録させたりすることもできる。

【0053】このようなカメラ部1における映像信号や音声信号を、記録再生部2に送信して記録させる場合、カメラ操作部7を無線信号の“送信開始”操作、“記録開始”操作をすることにより、実施できる。

【0054】すなわち、カメラ操作部7を無線信号の“送信開始”操作、“記録開始”操作をすることカメラ操作部7はそのための制御信号を発生し、カメラ変復調部8やコンテンツボラリメモリ6が駆動制御される。

【0055】カメラ変復調部8は、カメラ操作部7からの当該“記録開始”制御信号を無線信号に変換してアンテナANT1より空中に送信し、これを受けた記録再生部2からの了解信号(ACK)を無線信号で受けた後に、カメラ部1における映像信号、音声信号を無線信号に変換してアンテナANT1より空中に送信する。

【0056】カメラ部1からの無線信号を受けた記録再生部2ではその無線信号をアンテナANT2を介して受信し、記録再生変復調部12に渡す。記録再生変復調部12ではこの無線信号を復調し、映像信号、音声信号、制御信号に変換する。そして、制御信号は図示しない制御部に渡す。制御部は“記録開始”制御信号を受けたことを認識して記録再生信号処理部13および記録部10を待機状態にし、了解信号(ACK)をアンテナANT2を介して無線信号で空中に送信する。

【0057】また、記録再生変復調部12では無線信号を復調して得た映像信号、音声信号、制御信号のうち、映像信号と音声信号については記録再生信号処理部13に渡す。

【0058】記録再生信号処理部13は、記録再生変復調部12で変換された映像信号を、MPEGなどの動画像圧縮方式の記録信号に変換し、そして、音声信号についてはオーディオ圧縮符号化方式による圧縮信号である記録信号に変換し、記録部10に与える。記録部10では、記録再生信号処理部13からの記録信号を記録媒体に記録する。

【0059】一方、記録再生部2に記録した映像や音声を再生してカメラ部1側で観賞したい場合には、カメラ部1の構成要素であるカメラ操作部7を操作して記録部2の“再生”を指示する。すると、カメラ変復調部8は、カメラ操作部7からの当該“再生”を指示する制御信号を無線信号に変換してアンテナANT1より空中に送信し、これを受けた記録再生部2からの了解信号(ACK)を無線信号で受けると待機状態になる。

【0060】記録再生部2では、“再生”を指示する制御信号を記録再生変復調部12において復調することにより、制御部は“再生”を指示する制御信号を受けたことを知る。そして、記録再生部2の当該制御部は、了解信号(ACK)を発生すべく制御し、これを記録再生変復調部12において無線信号に変換した後に、アンテナANT2より空中に送信する。

【0061】そして、記録再生部2の制御部では、記録部10に“再生”を指示し、この指示を受けた記録部10は記録媒体から記録信号を再生する。再生された記録信号は記録再生信号処理部13に送られ、ここで記録信号は符号化コードから元の映像信号や音声信号に復元さ

れる（但し、受信側で記録信号を復号できる場合はこの段階で復号はせず、記録信号のまま送信する形態であってもよい）。そして、変換された映像信号や音声信号は記録再生変復調部12において無線信号に変調されてからアンテナANT2を介して空中に送信される。

【0062】カメラ部1ではこの無線信号をアンテナANT1を介して受信し、カメラ変復調部8にて復調して映像信号、音声信号に戻し、音声信号は音声部4に与えて音声として出力させると共に、映像信号は表示部9に与えて画像として表示させる。

【0063】この結果、カメラのユーザは記録再生部2に記録されていた映像と音声をカメラ側において視聴することができる。

【0064】また、ユーザが早送りや巻き戻しをしたい場合には、カメラ操作部7を操作して記録部2の“早送り”或いは“巻き戻し”を指示する。すると、カメラ変復調部8は、カメラ操作部7からの当該“早送り”或いは“巻き戻し”を指示する制御信号を無線信号に変換してアンテナANT1より空中に送信する。そして、これを受けた記録再生部2では、“早送り”或いは“巻き戻し”を指示する制御信号を記録再生変復調部12において復調することにより“早送り”或いは“巻き戻し”を指示する制御信号を受けたことを知る。

【0065】そして、記録再生部2では、制御部が記録部10に“早送り”或いは“巻き戻し”を指示し、記録部10は記録媒体を“早送り”或いは“巻き戻し”操作する。

【0066】このとき、記録再生部2では、“早送り”した量、或いは“巻き戻し”した量をカメラ側に送ってそれを表示させるようにしたりすると、使い勝手のよいものとなる。

【0067】操作を終了したい場合には、ユーザがカメラ操作部7を操作して“終了”を指示する。すると、カメラ変復調部8は、カメラ操作部7からの当該“終了”を指示する制御信号を無線信号に変換してアンテナANT1より空中に送信する。そして、アンテナANT2を介してこれを受けた記録再生部2では、制御信号を記録再生変復調部12において復調することにより“終了”を指示する制御信号を受けたことを知る。

【0068】そして、記録再生部2では、記録部10に“終了”を指示し、記録部10は記録媒体に対する操作を終了する。

【0069】以上は、カメラ部1からの各種操作に伴うカメラ部1と記録再生部2の動作の説明であった。次に、記録再生部2側からカメラ部1と記録再生部2を操作する場合について説明する。

【0070】<記録再生部2側からのカメラ部1と記録再生部2を操作例>本システムでは、記録再生部2の操作部11を操作することで、記録再生部2の操作はもとより、カメラ部1の各種操作をすることができます。

【0071】例えば、操作部11を操作することにより、カメラ部1および記録再生部2における“撮影開始／終了”、カメラ部1の光学系の“ズームイン／ズームアウト”操作、無線信号の“送信開始／終了”、“記録開始／終了”、コンテンポラリメモリ6に記憶している映像信号、音声信号の“再生”、“早送り”、“巻き戻し”、“一時停止”などの操作制御、そして、記録再生部2の記録部10に記憶している映像信号、音声信号の“再生”、“早送り”、“巻き戻し”、“一時停止”などの操作制御を記録再生部2側から行うことができる。

【0072】従って、カメラにより像を撮影する場合、記録再生部2側からその操作部11を“撮影開始”操作することでも実施可能になる。

【0073】“撮影開始”操作が成されるとそのための制御信号が操作部11から出力され、記録再生変復調部12で変調されてアンテナANT2から空中に送信され、これがカメラ部1においては、アンテナANT1より受信され、カメラ変復調部8で復調されて図示しない制御部に与えられる結果、カメラ部1では撮像動作が開始され、カメラ部1の光学系を介してとらえた被写体像は撮像部3において電気信号に変換され、カメラ信号処理部5に送られて、ここでこの電気信号はアナログ、あるいはデジタルの映像信号に変換される。そして、この映像信号はカメラ部1の持つ表示部9に画像として表示される。

【0074】また、カメラの撮影した映像を記録再生部2に記録させるようにする場合、記録再生部2における操作部11を“送信開始”操作、“記録開始”操作をする。これにより、そのための制御信号が操作部11から出力され、記録再生変復調部12で変調されてアンテナANT2から空中に送信され、これがカメラ部1においては、アンテナANT1より受信され、カメラ変復調部8で復調されて図示しない制御部に与えられる結果、カメラ部1ではカメラ変復調部8やコンテンポラリメモリ6が駆動制御される。

【0075】コンテンポラリメモリ6には映像信号や、音声部4からの音声信号を一定時間分、一時的に記憶されており、その記憶内容を読み出して、これをカメラ変復調部8に与える。そして、このカメラ変復調部8にてこれを変調し、無線信号化してから、アンテナANT1より空中に送出する。

【0076】また、コンテンポラリメモリ6の保持する映像信号や音声信号の送信ばかりでなく、カメラ信号処理部5から出力される現在撮影中の映像の映像信号や音声部4のとらえた生の音声の信号を記録再生部2に送信して記録させたりすることもできる。

【0077】カメラ部1からの無線信号を受けた記録再生部2ではその無線信号をアンテナANT2を介して受信し、記録再生変復調部12に渡す。記録再生変復調部12ではこの無線信号を復調し、映像信号、音声信号、

制御信号に戻す。そして、記録再生変復調部12では無線信号を復調して得た映像信号、音声信号、制御信号のうち、映像信号と音声信号については記録再生信号処理部13に渡す。

【0078】記録再生信号処理部13は、記録再生変復調部12から得られた映像信号を、無圧縮の場合はMPGなどの動画像圧縮方式の記録信号に変換し、そして、音声信号についてはこれも無圧縮ならばオーディオ圧縮符号化方式による圧縮信号である記録信号に変換し、記録部10に与える。

【0079】映像信号や音声信号が圧縮符号化されていれば、改めて圧縮符号化はしないでそのまま記録部10に与える。

【0080】記録部10では、記録再生信号処理部13からの記録信号を記録媒体に記録する。

【0081】一方、記録再生部2側において、当該記録再生部2に記録した映像や音声を再生してカメラ部1側に送りたい場合には、記録再生部2における操作部11を操作して記録部2の“再生”と“送信開始”を指示する。すると、記録再生変復調部12は、操作部11からの当該“再生”を指示する制御信号を記録再生部2の図示しない制御部に与え、制御部は記録部10に再生を開始させると共に、記録再生変復調部12に送信をさせるべく制御する。

【0082】記録部10の再生信号は記録再生変復調部12により変調されて無線信号化され、アンテナANT2を介して空中に送信される。

【0083】カメラ部1ではこの無線信号をアンテナANT1を介して受信し、カメラ変復調部8により復調して映像信号と音声信号に戻し、映像信号は表示部9に与えて映像として表示させ、音声信号は音声部4に与えて音声として出力させる。また、コンテンポラリメモリ6に与えられて保持される。

【0084】このように、本システムは、カメラ部1と記録再生部2とは別体になっており、記録再生部2の操作部11またはカメラ部1の操作部7を操作することで、記録再生部2の操作はもとより、カメラ部1の各種操作をできると共に、カメラ部1で撮像した映像は無線伝送により、記録再生部2に送って当該記録再生部2に記録するようにし、また、記録再生部2において再生した映像をカメラ部1に無線伝送してカメラ部1側で観賞することができるようとしたものであるから、カメラ部1は一層の小型軽量化を図ることができるようになり、このカメラ部1の小型軽量化による使用者への負担解消、低消費電力化、記録再生部2の装置サイズの制限緩和による長時間記録などが可能になる。また、カメラ部1、記録再生部2を相互に遠隔操作できるばかりでなく、記録再生部2の記録部10に記録された映像信号、音声信号、あるいは外部から入力された映像信号、音声信号を使用者の手元のカメラ部1の表示部9

で確認することができる。さらに、記録再生部2の入出力端子14を公衆伝送網25に接続することによって、映像信号、音声信号、記録信号、制御信号を本撮影装置および記録装置と家庭のビデオサーバなどの間で公衆伝送網25を介して送受信することも可能となる。

【0085】なお、本システムは記録再生部2に操作部を有してカメラ部1の遠隔操作を含めシステムの操作ができるように構成してある。従って、カメラ部1は必ずしも使用者が手に持っている必要はなく、また記録再生操作部11でカメラ部1の電源の入り切りを操作できるよう構成すれば、無人監視カメラとして使用できる。また、映像のみの記録を行う場合は、図2に示すように、カメラ部1から音声部4を省略した構成にしてもよい。

【0086】ここで、本発明システムにおいて用いられる無線信号のデータフォーマットについて触れておく。<無線信号のデータフォーマット例>図3は、カメラ変復調部8、記録再生変復調部12で変換され、カメラ部1と記録再生部2間で無線伝送される無線信号のデータフォーマット構成図である。本システムにおいて用いられるデータフォーマットは、図3(a)に示すように、制御信号の格納領域であるヘッダ部300と映像音声データの格納領域であるデータ領域部310とから構成され、図3(b)に示すように、ヘッダ部300部分は、データの先頭を示す符号301、カメラ部1、記録再生部2で無線信号の送信源を識別するためのカメラIDデータ302、カメラ部1、記録再生部2の操作制御を行うための制御データ303から構成される。

【0087】<カメラ変復調部8の構成例>図4はカメラ変復調部8の、主として変調処理系統部側の構成例を示したものである。図4に示すように、本カメラ変復調部8は、記録再生部2や別のカメラからの無線信号を受信して制御信号等を復号する無線受信部15と、受信した無線信号の誤り率等を判定する誤り判定部16と、映像信号を圧縮符号化して映像圧縮符号列を生成する映像符号化部17と、音声信号を圧縮符号化して音声圧縮符号列を生成する音声符号化部18と、映像圧縮符号列、音声圧縮符号列、および、カメラ操作部7で生成された制御信号を多重化して多重化符号列を生成する多重化部19と、この多重化部19から出力される多重化符号列を無線変調して送信する無線送信部20とからなる。

【0088】このような構成において、映像符号化部17および音声符号化部18は、入力された映像信号および音声信号をより少ない情報量に圧縮符号化する処理を行う。尚、圧縮符号化の方式は例えばISO MPEGで規定されている方式を用いてよい。

【0089】すなわち、映像符号化復号化部17は撮像部3で撮像され、カメラ信号処理部5で映像信号化された映像を、情報量がより少なくなるように圧縮符号化する処理を行い、その圧縮符号化した出力を多重化部19

に送る。また、音声符号化部18は、音声部4にてとらえられた音声信号を、情報量がより少なくなるように圧縮符号化する処理を行い、その圧縮符号化した出力を多重化部19に送る。また、多重化部9には、制御信号やカメラIDデータなども与えられ、多重化部19はこれら符号化情報、制御信号などを多重化して無線送信部20に送信する。無線送信部20はこの多重化された信号を無線信号化してアンテナANT1より空中に送信する。

【0090】また、他のカメラや記録再生部2からの無線信号はアンテナANT1を介して受信され、無線受信部15に送られる。そして、この無線受信部15では、受信した信号を復調して、誤り判定部16に与え、この誤り判定部16は、記録再生部2や別のカメラから受信した無線信号に混入した誤りの割合(誤り率)や性質(バースト長等)を判定し、無線状態信号を映像符号化部17、音声符号化部18および多重化部19に送る。

【0091】ここで、映像符号化部17および音声符号化部18で採用する符号化方式としては、映像信号、音声信号等が誤りの混入する無線信号を介して記録再生部2等に送られることを考慮し、無線誤りへの耐性を有する映像・音声符号化方式を用いるようにしてもよい。例えば、映像圧縮符号化方式に、映像フレームを細かな領域に分割し、各領域毎に再同期が図れるようにするビデオパケットと呼ばれる方式や、符号列中の重要な情報を二重化して一方の情報が欠落しても他方の情報から復号が行えるようにする重要情報の二重化方式、符号列の順方向だけでなく逆方向からも復号を行ふことができる双方向復号可能な可変長符号(リバーシブルVLC)、映像信号の一部をフレーム内符号化して劣化した映像信号の回復を図るリフレッシュ符号化、誤り訂正符号等を用いてよい。

【0092】このような方式を用いることにより、無線の誤りが混入してもより高品質に映像・音声信号を送ることができる。また、多重化部19においても誤り訂正符号や誤った情報の再送処理(ARQ)等の無線誤り対策を行ってよい。

【0093】上述したように、誤り判定部16は、記録再生部2や別のカメラから受信した無線信号に混入した誤りの割合(誤り率)や性質(バースト長等)を判定し、無線状態信号を映像符号化部17、音声符号化部18および多重化部19に送るが、これを受けた映像符号化部17、音声符号化部18および多重化部19では、無線状態信号に応じて映像・音声信号の圧縮符号化の方式やパラメータを変える。そして、これにより、誤りに強い符号化信号にして無線送信することができるようになる。

【0094】なお、無線状態信号に応じて映像・音声信号の圧縮符号化の方式やパラメータを変える例として、例えば、誤り率が高い場合には映像符号化部17において

て、リフレッシュのためのフレーム内符号化の割合を多くしたり、より訂正能力の強い誤り訂正符号の強さを用いたり、バースト長に合わせてビデオパケットの長さを変えるといった処理があげられる。また、多重化部19において誤り率が高い場合により訂正能力の強い誤り訂正符号を用いたり、ARQ(再送処理)の最大再送回数を多くする等の処理であってもよい。

【0095】このような変調処理を、カメラ復変調部8に実施させることによって、圧縮符号化した映像・音声信号や制御信号を、商品質で無線送信することができるようになり、良質の映像・音声信号を送信して記録に供するようにしたり、観賞に供するようにできる。

【0096】以上、具体例1の本発明の撮影装置および記録装置では、映像・音声信号を記録再生部2や別のカメラに送るだけでなく、記録再生部2や別のカメラからの無線信号を受信し、受信した無線信号の誤り率を判定してこれにより映像・音声信号を圧縮符号化する方式やパラメータを変えることにより、無線伝送路の状態に対応してより高品質に映像・音声信号を送ることができ

る。

【0097】なお、一般的には、より多くの誤り耐性符号化方式を組み合わせたり、符号化パラメータを設定すると、映像・音声圧縮符号化の無線誤りに対する耐性は増すものの、無線誤りが混入しなかった場合の品質は低下してしまう。しかし、本システムでは、誤り率を求めることができ、記録再生部2や別のカメラへ送った無線信号に混入した誤り率や性質が分かれば、これに応じて映像・音声符号化のパラメータや方式を変え、無線誤りにより適した映像・音声符号化を行うことができるの

で、信号の品質を保持できるようになる。

【0098】記録再生部2や別のカメラと双方向通信を行っている場合は、受信した無線信号と同様の誤り率や誤りの性質を持つ無線誤りが、カメラ部1から記録再生部2や別のカメラに送られる無線信号にも混入していると考えられる。

【0099】従って、受信無線信号の誤り率や性質に応じて送信する映像・音声信号の圧縮符号化の方式やパラメータを変えれば、無線伝送路の性質により適した圧縮符号化を行うことができる。

【0100】以上、詳述したように、具体例1に示した構成は本発明の基本構成であって、撮影装置と記録装置を別体とし、両者間は無線回線により接続すると共に、撮影装置と記録装置は、それぞれに設けた操作部の操作により、互いに遠隔操作を可能にしており、また、撮影装置で撮影してその映像等を記録装置に送って記録させ、その映像を再生して撮影装置側に送って撮影装置でモニタすると云ったことができるようになしたものである。

【0101】このように、本発明は撮影装置と記録装置

を別体とし、両者間は無線回線により接続して両者を別体化したことによる従来のメリットを踏襲するだけでなく、両者をそれぞれが遠隔操作可能にして、遠方につても相手装置を自在に操作できるようにして別体構成による不便を解消し、また、記録装置に記録した映像等を撮影装置側でモニタしたり、観賞したりすることが可能になり、撮影装置と記録装置が離れていることによる不便も解消できるようになる。

【0102】次に、この基本構成をベースにすると共に、無線回線で映像信号等を無線伝送することができるカメラが複数台ある場合に、自己のカメラの映像ばかりでなく、他のカメラで撮影した映像を互いに融通し合いで、有効に利用できるようにする撮影システムの具体例を、説明する。

【0103】【具体例2】図5は、使用者のカメラばかりでなく、無線回線で映像信号等を無線伝送することができる他人のカメラが複数台ある場合に、使用者の周辺に存在する他人のカメラからの映像、音声をも利用できるようにするための本撮影装置および記録装置の構成例を説明するブロック図である。図において、1は別体化されたカメラ部であり、2は別体化された記録再生部である。また、21はカメラ部1とは別のカメラである。これらカメラ部1、カメラ部21及び記録再生部2間は、映像信号や音声信号、そして、制御信号を双方向に無線伝送することができる構成となっている。

【0104】カメラ部1及びカメラ21は、撮像部3と、音声部4と、カメラ信号処理部5と、コンテンツボラリメモリ6と、カメラ操作部7と、カメラ復変調部8と、表示部9およびアンテナANT1、ANT21を備えて構成される。

【0105】また、記録再生部2は、記録部10と、記録再生操作部11と、記録再生復変調部12と、記録再生信号処理部13と、入出力端子14およびアンテナANT2を備えて構成される。

【0106】なお、カメラ21の構成は無線回線で映像信号等を無線伝送することができて、本撮影装置および記録装置とデータ授受できるようになっていれば良く、必ずしも本発明システムで用いているカメラ部1と同じ構成である必要はない。

【0107】ここで、撮像部3、音声部4、カメラ信号処理部5、コンテンツボラリメモリ6、カメラ操作部7、カメラ復変調部8、表示部9、記録部10、記録再生操作部11、記録再生復変調部12、記録再生信号処理部13、入出力端子14は図1で説明した同一名称同一符号の要素と機能は基本的には同じであるから、必要に応じて具体例1での説明を参照するものとし、ここでは改めて説明はしない。

【0108】ここで説明するシステムでは、他のカメラ21から自己のカメラ部1や記録再生部2に映像信号や音声信号を取り込んだり、自己のカメラ部1や記録再生

部2からの映像信号や音声信号を他のカメラ21が取り込んだりすることを可能にしている。

【0109】そのために、本発明システムにおいては、カメラ側の操作部であるカメラ操作部7、あるいは記録再生部側の操作部である記録再生操作部11において操作ボタンなどで“公開”、“非公開”的設定操作を行うことができるようにしており、公開の操作を行うと、カメラ部1のカメラ変復調部8または記録再生部2の記録再生変復調部12では、カメラ部1と記録再生部2間で無線伝送される無線信号のカメラ部1、記録再生部2の操作制御を行うための制御データ内に存在する公開、あるいは非公開を示す符号が上記操作による設定対応に設定される構成としてある。また、カメラ部1と記録再生部2の間での無線伝送による映像信号や音声信号等は自系統のシステムであるので、制御データ内の“公開”、“非公開”を示す符号の内容に無関係に取り込んで利用できるが、自系統外のシステムである他のカメラ21から受信した無線信号は、その無線信号内の制御データにおける“公開”、“非公開”を示す符号が“公開”的場合のみ、取り込んで利用できる。他のカメラ側からみたカメラ部1と記録再生部2の間での無線伝送による映像信号や音声信号等は、他系統のシステムからの信号であるので、制御データ内の“公開”、“非公開”を示す符号の内容が“公開”的場合に限り、そのカメラ21の系統のシステムで取り込んで利用できる。

【0110】“公開”、“非公開”で第3者が伝送されてきた信号を利用できたり、できなかつたりする仕組みを最も簡単に実現するには、信号を暗号化／非暗号化することである。つまり、“公開”的場合は非暗号化し、“非公開”的場合は暗号化する。

【0111】このような構成において、今、例えば、カメラ部1の使用者および別のカメラ21の使用者が、当該カメラ部1やカメラ21から送信する無線信号の内容を、周辺にいる他のユーザに向けても、全て公開するといった場合を考えてみる。

【0112】この場合、カメラ操作部7、記録再生操作部11の操作ボタンで“公開”的設定操作を行う。

【0113】すなわち、カメラ操作部7や、記録再生操作部11には、“公開”、“非公開”的設定操作を行うための操作ボタンがあるのでこれを操作することで、伝送する信号を他に“公開”すると云う設定を行う。そして、この公開の操作を行うと、カメラ部1と記録再生部2間、別のカメラ21とそのカメラ21の記録再生部間で無線伝送される無線信号中の操作制御のための制御データ内に存在する公開、あるいは非公開を示す符号が本無線信号の内容が公開されていることを示すように設定される。(なお、無線信号のカメラID、あるいは新たな制御データ符号を設定することによって、無線信号の公開先をカメラ部1周辺の不特定多数ではなく、限定することも可能である。)そのため、別のカメラ21から

送信されている無線信号を受信したカメラ部1におけるカメラ変復調部8は、当該別のカメラ21からの無線信号を映像信号、音声信号に変換できるようになり、カメラ部1の使用者は、別のカメラ21からの映像信号、音声信号を手元のカメラ部1の表示部9で確認できる。

【0114】同様に、カメラ部1や記録再生部2から送信されている無線信号を受信した別のカメラ21においても当該カメラのカメラ変復調部8が、カメラ部1や記録再生部2から送信されている無線信号を受信して映像信号、音声信号に変換できるようになり、当該別のカメラ21の使用者は、カメラ部1や記録再生部2からの映像信号、音声信号をカメラ21の表示部9で確認できる。

【0115】そして、カメラ部1の使用者は、確認した別のカメラ21からの映像信号、音声信号を利用したければ、カメラ操作部7、記録再生操作部11の操作ボタンなどで選択操作を行うことによって、その選択操作したチャンネルの(すなわち、選択したカメラからの)映像信号と音声信号を記録再生部2に送信、あるいはカメラ部1のコンテンツメモリ6に記憶することができる。すなわち、上記選択操作により、カメラ変復調部8はその映像信号と音声信号を逐次コンテンツメモリ6に入力して記憶させていく。そして、これを読み出してカメラ変復調部8により変調して無線信号に変換し、“記録”指示のための制御信号と共にアンテナANT1より空中に送信する。

【0116】カメラ部1からの無線信号を受けた記録再生部2ではその無線信号をアンテナANT2を介して受信し、記録再生変復調部12に渡す。記録再生変復調部12ではこの無線信号を復調し、映像信号、音声信号、制御信号に変換する。

【0117】記録再生変復調部12では無線信号を復調して得た映像信号、音声信号、制御信号のうち、映像信号と音声信号については記録再生信号処理部13に渡す。

【0118】記録再生信号処理部13は、記録再生変復調部12で変換された映像信号を、MPEGなどの動画像圧縮方式の記録信号に変換し、そして、音声信号についてはオーディオ圧縮符号化方式による圧縮信号である記録信号に変換し、記録部14に与える。記録部14では、記録再生信号処理部13からの記録信号を記録媒体に記録する。

【0119】これにより、他のカメラから無線伝送される公開された映像信号、音声信号を自己の系統のシステムにおける記録再生部2に記録することができる。

【0120】逆に、別のカメラ21から送信されている無線信号が非公開にされている場合は、カメラ部1のカメラ変復調部8や記録再生部2の記録再生変復調部12は受信した無線信号の復調信号中から“非公開”を示す符号を検出し、これによって、カメラ21から送信され

ているその無線信号の復調出力はテンポラリメモリ6や表示部9、音声部4へは出さないように機能する。従って、非公開の設定のある無線信号を受信した場合は、カメラ変復調部8や記録再生変復調部12でその無線信号を映像信号、音声信号に変換できない。

【0121】同様に、カメラ部1や記録再生部2から送信されている無線信号が非公開にされている場合は、別のカメラ21のカメラ変復調部8は受信した無線信号の復調信号中から“非公開”を示す符号を検出し、これによって、カメラ部1や記録再生部22から送信されているその無線信号の復調出力はテンポラリメモリ6や表示部9、音声部4へは出さないように機能する。従って、非公開の設定のある無線信号を受信した場合は、カメラ変復調部8や記録再生変復調部12でその無線信号を映像信号、音声信号に変換できない。

【0122】なお、無線信号を映像信号、音声信号に変換できないようにする手法は、特にこれを限定しないが、一例を挙げれば、少なくとも一部の符号化データに暗号化処理を施した出力と、暗号化処理のしていない出力を選択できる構成として無線信号の非公開／公開の選択に応じて、選択するようにすると云った手法が考えられる。

【0123】すなわち、符号化データに暗号化処理を施して出力する手段を設け、この暗号化処理出力手段の出力と暗号化処理のしていない出力を選択する手段とを設けて、無線信号の非公開のときは暗号化処理出力手段の出力を選択して、これを無線信号で送信し、公開のときは暗号化処理していない出力を選択して、これを無線信号で送信するようとする。そして、特定の記録装置である、記録再生部2に暗号化解読処理手段を設けて暗号化してある無線信号の受信時には、これを通して解読処理を施すことと、特定の記録再生装置にのみ、映像信号や音声信号を受け渡すことができるようになる。

【0124】また、カメラ部1周辺に無線信号が公開されている複数のカメラが存在する場合は、カメラ部1はそれら公開の無線信号それぞれを受信して映像信号や音声信号、制御信号を復調し、必要に応じて利用できる。そして、この場合、利用できるカメラが複数台あることから、これを切り替えて利用することになる。

【0125】本システムでは、カメラ操作部7、記録再生操作部11の操作ボタンなどで切り替え操作を行うことによって順次、チャンネルが切り替えられて1チャンネル分の、すなわち、所望の1台のカメラからの映像信号、音声信号を手元のカメラ部1の表示部9で確認できるようにしたり、あるいは図6のように表示部9の画面をN画面（但し、Nは2以上の整数）に分割してマルチ画面表示できるようにしてそれぞれのカメラからの映像信号、音声信号を手元のカメラ部1の表示部9で確認できるようにしてある。

【0126】そして、カメラ部1の使用者は、確認した

別のカメラ21からの映像信号、音声信号を利用したければ、カメラ操作部7、記録再生操作部11の操作ボタンなどで選択操作を行うことによって、その選択操作したチャンネルの（すなわち、選択したカメラからの）映像信号と音声信号を記録再生部2に送信、あるいはカメラ部1のコンテンポラリメモリ6に記憶することができる。すなわち、上記選択操作により、カメラ変復調部8はその選択したチャンネルの映像信号と音声信号を逐次コンテンポラリメモリ6に入力して記憶させていく。そして、これを読み出してカメラ変復調部8により変調して無線信号に変換し、“記録”指示のための制御信号と共にアンテナANT1より空中に送信する。

【0127】カメラ部1からの無線信号を受けた記録再生部2ではその無線信号をアンテナANT2を介して受信し、記録再生変復調部12に渡す。記録再生変復調部12ではこの無線信号を復調し、映像信号、音声信号、制御信号に変換する。

【0128】記録再生変復調部12では無線信号を復調して得た映像信号、音声信号、制御信号のうち、映像信号と音声信号については記録再生信号処理部13に渡す。

【0129】記録再生信号処理部13は、記録再生変復調部12で変換された映像信号を、MPEGなどの動画像圧縮方式の記録信号に変換し、そして、音声信号についてはオーディオ圧縮符号化方式による圧縮信号である記録信号に変換し、記録部10に与える。記録部10では、記録再生信号処理部13からの記録信号を記録媒体に記録する。

【0130】なお、無線信号が公開されているカメラの数が分割画面数のN以上ある場合もあり、このようなときはマルチ画面表示しても分割画面数が不足することになるが、この場合は順番に画面を入れ替えるようにすると良い。これにより、すべてのカメラの画像を時間分割でみることが可能になる。

【0131】また、記録中のチャンネルの画面は中央に表示したり、枠（またはそれに準ずる注目の印）をつけることによって記録画面の確認ができる。さらに、図7のように、記録中のチャンネルの画像を全画面で表示し、別のカメラ21の画像を子画面で出し、操作によって入れ替えるといった方式を採用することもできる。

【0132】なお、別のカメラ21からの映像信号、音声信号を確認している間は、カメラ部1で撮影している映像信号、音声信号をコンテンポラリメモリ6に記憶しておいて、後で非同期に、あるいはタイムコードを付して送信するようにすれば、その間の撮影が途切れなくなり、撮影チャンスを失う危険も回避できる。また、カメラ部1の使用者が、当該カメラ部1から選択操作によって別のカメラ21の無線信号内のカメラIDのみを記録再生部2に送信し、記録再生部2には、当該別のカメラ21のカメラID（識別情報）を保持させるようにし、

かつ、この状態では、保持したカメラIDの情報を持つカメラからの無線信号から得られる映像信号、音声信号を記録するようになると、多数台のカメラで撮像している場合には目的のカメラの映像をチャンスを失うことなく記録再生部2に記録させることができるようになる。

【0133】さらに、カメラ部1周辺に無線信号が公開されている複数のカメラが存在する場合に、各カメラにおける映像信号の時間変化、音声レベルなどを比較し、カメラ部1、あるいは各カメラからの映像信号、音声信号の選択を切り換えるようにすれば、音声を出しながら移動するような被写体などを的確に撮影できる。加えて、カメラ部1は必ずしも使用者が手に持っている必要はなく、また記録再生操作部1で複数のカメラの電源の入り切りまでも操作できるようにすれば、無人監視カメラシステムを容易に構築できる。

【0134】従って、本発明によれば、カメラが複数台ある場合に、自己のカメラの映像ばかりでなく、他のカメラで撮影した映像を互いに融通し合い、有効に利用できるようになる撮影システムの技術が構築できる。

【0135】尚、本システムは記録再生部2に、コンテンポラリメモリなどのデータ一時記憶手段を設けて、少なくとも1つの受信データを一時記憶できるようにし、複数台ある各カメラからの映像を任意に切り替えて録画に供する場合に、あるカメラの映像チャンネルから他のカメラの映像チャンネルに切り替える指定をすると、その新たに切り替えるチャンネルの映像の受信データを一時記憶手段に記憶開始し、切り替え前のチャンネルの受信データの所定単位の記録終了後に、一時記憶手段に記憶した受信データの読み出しを開始して所定位置からの記録を可能にする構成とすると良い。この構成によれば、あるチャンネルから別のチャンネルに録画を切り替える際に、すなわち、録画対象をあるカメラの映像から別のカメラの映像に切り替える際に、切り替えに伴うタイムラグを解消して、目的の映像をチャンスを損なうことなく、全て録画することができるようになる。

【0136】以上は、無線伝送する映像信号や音声信号を公開にした場合に、これを受信できるカメラや記録装置において自由に活用できるようにした例であった。このようなシステムにおいては、撮影位置のわからないカメラからの映像を利用することになるので、カメラの位置が情報として掴めれば、一層便利である。そこで、次にカメラの撮影位置がわかるようにした例を具体例3として次に説明する。

【0137】【具体例3】この具体例は、点在する各カメラの撮影位置がわかるようにしたり、自己の撮影位置がわかるようにするために、各カメラに位置検出装置を持たせたものである。すなわち、図8に示すように、カメラ部1には当該カメラ部1の位置や撮影方向を検出してその情報をカメラ変復調部8や表示部9に与えるカメラ位置検出部22を設けてある。

【0138】このカメラ位置検出部22は、当該カメラ部1の位置や撮影方向をGPS (Global Positioning System: グローバル定位システム: 米国が打ち上げた二四個のGPS衛星のうち四個以上からの電波を同時に受けて、船舶・航空機・自動車などが自分の位置を知る装置)、地磁気センサなどで検出し、地上における所在位置の情報としてのカメラ位置信号を生成するものである。そして、カメラ位置検出部22の生成するカメラ位置信号を、必要によっては地図情報と共にカメラ変復調部8に与えることにより、当該カメラ変復調部8はこのカメラ位置信号を変調して無線信号としてアンテナANT1より外部に送信することができ、また、表示部9に与えることによりカメラの位置と向きを表示できる構成である。

【0139】また、図9は、このシステムにおいて使用される伝送データのフォーマットであり、カメラ部1と記録再生部2間で無線伝送される無線信号にカメラ位置信号が含まれる場合の構成図である。ヘッダ300には先頭符号301、カメラID302、制御データ303に加え、カメラ位置データ304のエリアが用意されており、ここにカメラ位置検出部22の生成するカメラ位置信号を格納して送信する。

【0140】図10は、上述したカメラ位置検出部22を有するカメラ部1による本撮影装置および、記録装置の動作を説明する図であって、図10(a)は、使用者のカメラ部1の位置を丸印で表現し、撮影方向を矢印で表現する形態で地図情報に重ねたかたちで表示部9に表示した例である。なお、使用者のカメラ位置を丸印で表現し、撮影方向を矢印で表現する形態で地図情報に重ねたかたちの映像は、カメラ位置検出部22が生成するものであって、カーナビゲーションシステムの技術を応用することで実現できる。なお、本システムは、撮影予定地周辺の地図情報に加え、観光情報などを予めカメラ部1に記憶しておくか、あるいは記録再生部2からそのような情報を送信してこれを利用するようにしたり、あるいは記録再生部2の入出力端子14に接続されたカーナビゲーションシステムなどから入力される情報をカメラに送信してこれを利用するなどしてもよい。なお、本システムは、背景の地図情報は無くてもよい。

【0141】ここに示す一例としてのカメラ部1は、所望の撮影位置と撮影方向を指定する撮影アングル指定手段または他の撮影装置を指定する手段をカメラ操作部7に持たせてあり、カメラ変復調部8はその指定情報に従って当該指定情報対応のカメラからの無線信号を受信してこれを記録再生装置2に無線伝送する機能を備えた構成としてある。従って、この場合、記録再生部2は上記指定情報対応に選択されて送られてくるカメラからの無線信号を受信して復調し、記録部10に記録することができるようになる。

【0142】図10(b)は、カメラ部1周辺で公開さ

れている無線信号を発信しているカメラの位置をカメラ番号を付して、撮影方向を矢印で表示し、使用者自身のカメラ部1にカメラ番号“1”を、そして、現在、選択されているカメラのカメラ番号を丸印で囲んだかたちでマークして、表示部9に表示した例である。

【0143】図10(c)は、カメラ位置検出部22を有するカメラ部1による運動会の会場における撮影例を説明する図である。この図に示すように、走っている被写体を競技トラックの外から撮影する場合、使用者自身の持つカメラ部1では被写体が近くになったり、遠くに離れたりしてしまう。例えば、カメラ番号“1”的カメラの画像を例にすると、当該カメラは時刻tにおいては競技者の至近に位置し、時刻t+nの時点では競技者が遙か彼方に通り過ぎていった状態での画面を示しているが、これからわかるように、あるカメラから見ると、被写体が近くになったり、遠くに離れたりしてしまう。

【0144】このような状況は、時期こそ違うにしても他のカメラ例えは“カメラ番号5”的カメラについても同様である。

【0145】そこで、撮影に際して、例えば、カメラ部1の表示部9に図10(b)の如くカメラ配置を地図上に表示した画面を作成して表示し、この画面で予めカメラ部1周辺の他のカメラの位置、撮影方向を確認しておき、これ記録に使用するカメラを的確に切り換えることによって、図10(d)のように、移動する注目被写体の映像や音声を、できるだけ適した位置から撮影したものとして記録できるようとする。

【0146】すなわち、図10(b)の如くカメラ配置を地図上に表示した画面を表示して、予めカメラ部1周辺の他のカメラの位置、撮影方向を確認しておき、競技の進行に伴って、記録に使用する最良の位置のカメラをカメラ操作部7により、順次選択指定する。これにより、カメラ変復調部8はその指定情報に従って当該指定情報対応のカメラから受信した無線信号を記録再生装置2に無線伝送する。

【0147】従って、この場合、記録再生部2は上記指定情報対応に選択されて送られてくるカメラからの無線信号を受信して復調し、記録部10に記録することになり、移動する注目被写体の映像や音声を、できるだけ適した位置から撮影したものとして記録再生部2に記録できるようになる。

【0148】なお、移動する被写体ばかりでなく、舞台上の各種発表会などにおける静止した被写体の撮影などの場合でも、複数のカメラを目的対応に配置して、目的対応にカメラを選択指定することで、カメラアングルや音声レベルなどの変化のある映像として記録することができるようになる。

【0149】また、各カメラがカメラ位置検出部22を有して、その検出したカメラ位置情報と撮影方向とを映像信号や音声信号と共に無線送信する構成である場合

に、カメラ部1には、所望の撮影位置と撮影方向を指定する撮影アングル指定手段と、他のカメラが無線伝送する映像信号、音声信号を受信する手段と、復号可能な複数の受信データから前記撮影位置・方向情報を抽出する撮影位置・方向情報抽出手段と、この撮影位置・方向情報抽出手段にて抽出した各カメラの撮影位置・方向情報のうち、撮影アングル指定手段にて指定した撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ復号可能な受信データを少なくとも1つ選択する手段とを設けた構成とし、撮影アングル指定手段にて所望の撮影位置と撮影方向を指定しておくと、撮影位置・方向情報抽出手段が抽出した他のカメラからの無線信号のうちの復号可能な無線信号から抽出した前記撮影位置・方向情報を用いて、各カメラの撮影位置・方向情報のうち、撮影アングル指定手段にて指定した撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ無線信号の映像信号と音声信号を選択するようできる。これにより、撮影アングル指定手段にて所望の撮影位置と撮影方向を指定することで、目的の撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ映像信号と音声信号を選択して記録に供することができるようになり、多数台のカメラが点在する場合で、各カメラの映像を利用できる場合に、目的の撮影位置と撮影方向に類似する該撮影位置・方向情報を持つ映像信号と音声信号を送信しているカメラのIDを録画再生部2に送って、そのIDを持つカメラの無線信号を復号処理させ、記録部に記録させるようにすれば、目的に合った映像を選択して使用者の考えているストーリに見合う映像を容易に取り入れて録画できるようになる。

【0150】以上の例は、カメラ部1と記録再生部2とが別体で、両者の間を無線回線により、接続される構成であるが、信号の授受に無線回線ばかりでなく、有線回線も使用できると一層便利である。その例を次に説明する。

【0151】[具体例4]図11は、互いに別体構成となっているカメラ部1と記録再生部2とを、構成的にドッキング接続できる構成とし、カメラ部1のコンテンツボラリメモリ6からの映像信号、音声信号をカメラ部1と記録再生部2とにそれぞれ設けた接觸コネクタ23を介して記録再生部2の記録再生信号処理部13に、記録再生部2の記録再生信号処理部13からの映像信号、音声信号をカメラ部1のコンテンツボラリメモリ6に出力する本撮影装置および記録装置の構成を示すブロック図である。なお、カメラ部1のコンテンツボラリメモリ6、記録再生部2の記録再生信号処理部13以外の構成は図1のブロック図と同様であるので省略した。

【0152】このような構成にすることによって、無線による伝送状態が悪いとき、あるいは撮影時においてはカメラ部1と記録再生部2間が離れ過ぎていて通信不可能であった場合に、後刻、カメラ部1と記録再生部2と

をドッキングさせ、映像信号、音声信号を伝送することによって、有線接続による記録ができる。また、有線による伝送を利用することから、無線伝送よりも高速に映像信号、音声信号を伝送することも可能になる。

【0153】尚、この具体例において、接触コネクタ23の代わりにカメラ部1と記録再生部2とを接続可能な、光（赤外線を含む）通信コネクタとすることもできる。そして、接触コネクタ23や光通信コネクタを具備している構成の場合に、無線伝送中はそのコネクタの駆動を禁止し、コネクタ接続中は無線伝送を禁止する手段をカメラ部1および記録再生部2含む構成とすると良い。これにより、コネクタ接続中にコネクタを利用した通信ではなく、無線伝送をしてしまったり、コネクタ接続していないのにコネクタを利用した通信を指令してしまったりという誤操作や誤動作による混乱を抑制できる。

【0154】また、カメラ部1には映像信号（及び音声信号）の符号化データを一時記憶する内部記憶手段（コンテンポラリメモリ6を利用しても良い）を設けて、無線伝送またはコネクタ接続が可能になった時に、該内部記憶手段に一時記憶された符号化データを記録再生部2へ伝送する構成とすることもでき、この場合、伝送の準備が整った段階で直ちに、伝送対象のデータを伝送開始できるので、タイムロスの無い効率的な伝送処理が可能になる。

【0155】この具体例4の構成の場合、カメラ部1に蓄えた映像信号や音声信号を記録再生部2に後で記録し直すということを行う。そして、この映像信号や音声信号の蓄積はコンテンポラリメモリ6を利用することから、コンテンポラリメモリ6の記憶容量が重要なポイントになる。

【0156】図12は、カメラ部1のコンテンポラリメモリ6がテープ媒体である構成を示すブロック図である。

【0157】このように、カメラ部1のコンテンポラリメモリ6を他の記録媒体に比べて大容量で、安価なテープ媒体とすることによって、一時記憶できる映像信号、音声信号のデータ量を増大できる。

【0158】ところで、カメラ部1と記録再生部2とが遠方に離れていて、低出力の無線電波では伝送ができないような場合、或いは障害物があって両者の間の通信が思うようにできないような場合に、映像信号と音声信号、そして、制御信号などの無線信号を中継器を介して中継させるようすれば、解消できるケースも多い。その例を次に具体例5として説明する。

【0159】【具体例5】図13は、カメラ部1のカメラ変復調部8からの無線信号をカメラ部1周辺に設けられた中継器24に送信し、中継器24の接続された伝送網25を介して遠隔地の記録再生部2部に伝送する本撮影装置および記録装置の使用方法を説明する図である。

なお、カメラ部1のカメラ変復調部8、記録再生部2の記録再生信号処理部13、入出力端子14以外の構成は図1のブロック図と同様であるので省略した。このように、カメラ部1周辺に設けられた中継器24を利用するによって、カメラ部1と記録再生部2間の距離の制限が解消される。

【0160】従って、本発明によれば、カメラが複数台ある場合に、自己のカメラの映像ばかりでなく、他のカメラで撮影した映像を互いに融通し合い、有効に利用できるようになる撮影システムの技術が構築できる。

【0161】具体例5は、カメラ部1と記録再生部2とが遠方に離れている場合に、自宅や、オフィスなどに置いた記録再生部2を伝送網25で繋ぎ、カメラ部1の電波の届く範囲に中継器24を設置してこの中継器24でカメラ部1からの電波を捉えて中継し、記録再生部2に渡して記録させるようにしたのであるが、マラソン競技などのように、コースが長距離に亘り、しかも、コースに沿ってカメラが点在する場合には、各カメラからの無線信号を、隣接するカメラ間で中継し合いながら記録再生部2に送信するようにすると、各カメラの無線信号電波が低出力であっても、映像信号と音声信号、そして、制御信号などの無線信号を簡易に記録再生部2に送ることが可能になる。その例を次に、具体例6として説明する。

【0162】【具体例6】図14は、カメラ部1及び、記録再生部2それぞれに中継部26を内蔵させた場合の本撮影装置および記録装置のシステム構成を示す図である。

【0163】カメラ部1は、カメラ変復調部8からの無線信号を送信するのみならず、別のカメラ部1や、記録再生部2からの無線信号を中継する中継部26を有している。また、記録再生部2も同様の中継部26を有し、各カメラ部1からの無線信号の自己への取り込みおよび自己における再生信号の他への送信の機能や受信した無線信号の他への中継の機能を有する構成である。

【0164】また、図14の構成の場合、伝送網25に接続される中継器24との間の無線中継も実行可能な構成である。なお、カメラ部1のカメラ変復調部8、記録再生部2の記録再生信号処理部13、及び、中継部26以外の構成は図1のブロック図と同様であるので図14中の記載を省略した。

【0165】この具体例の構成の場合、各カメラ部1、記録再生部2に中継部26を有することにより、各カメラ部1および記録再生部2は受信した電波を中継することができるようになり、これら各カメラ部1、記録再生部2は無線ネットワーク網を構成することができる。

【0166】そのため、複数のカメラ部1が点在する場合に、各カメラ部1の出力する無線信号は隣接のカメラ部1にて中継されて送信されていく。そして、中継されてきた無線信号が記録再生部2に到達して当該記録再生

部2に取り込まれると、記録再生変復調部12にて無線信号を復調して得た映像信号、音声信号、制御信号のうち、映像信号と音声信号については記録再生信号処理部13に与えられて、映像信号はMPEGなどの動画像圧縮方式の記録信号に変換し、そして、音声信号についてはオーディオ圧縮符号化方式による圧縮信号である記録信号に変換し、記録部10に与える。記録部10では、記録再生信号処理部13からの記録信号を記録媒体に記録する。

【0167】このようにして、各カメラを中継器として活用して無線信号を中継して記録再生部に送ることができるようになり、遠方のカメラからの映像であってもこれを記録再生部2で録画でき、さらに、カメラ部1と記録再生部2間の距離の制限が解消される。従って、本発明によれば、カメラが複数台ある場合に、自己のカメラの映像ばかりでなく、他のカメラで撮影した映像を互いに融通し合い、有効に利用できるようになる撮影システムの技術が構築できる。

【0168】以上、本発明について、種々の実施形態を説明してきたが、必ずしもこれらに限定されることはなく、種々変更して実施可能である。

【0169】例えば、カメラ部1、記録再生部2のカメラ操作部7、記録再生操作部11での使用者の操作に当っては、音声部からの音声や表示部9に表示される文字情報などによって操作方法のガイダンスを実施することができるようとしてもよい。

【0170】また、無線伝送において、現在の電波使用状況を調べ、空きチャンネルを選択して通信に供するようになると、輻輳を避けて、円滑な通信ができるようになる。具体的には、例えば、特定記録装置（または特定中継器）と撮影装置の間の空きチャンネルの有無の検出手段と、空きチャンネルが存在しない場合は、無線伝送を禁止する手段を、撮影装置や特定記録装置（または特定中継器）に設けて構成する。そして、無線伝送する際には、検出手段で現在の電波使用状況を調べ、空きチャンネルを選択してその選択したチャンネルを使用して送信し、空きチャンネルが存在しない場合は、無線伝送を禁止する。この結果、同一チャンネルを使用して複数がそれぞれ送信を行うといった事態を未然に防いで、円滑な通信が可能になる。

【0171】また、無線伝送が中断中で、伝送再開の可能性がある場合に、伝送再開のためのチャンネルを確保するための電波を周辺に出力する手段を設けて、通信途中で通信を中断しているときなどにおいて、その使用チャンネルを確保するための電波を周辺に出力することができる構成とすれば、何らかの都合で通信を中断して再開を待つような場合に、通信のために確保して使用していたチャンネルを、他にとられずに、円滑に通信を再開することが可能になる。

【0172】なお、周辺の電波状態によっては、伝送の

方式、伝送レート、画像サイズなどを適宜調整するようにしてよい。

【0173】また、撮影装置や特定記録装置（または特定中継器）には、特定記録装置（または特定中継器）と撮影装置の間の伝送可能帯域を検出する検出手段と、その検出した伝送可能帯域に応じて符号化データ量を制御し、伝送可能帯域が所定値以下の場合に無線伝送を禁止する手段を設ける構成とすると、通信に利用するチャンネルの使用可能な伝送可能帯域に対応に、データ量を制御して伝送することができ、許容される最高の伝送レートでデータ送信ができるほか、伝送可能帯域が所定値以下の場合に無線伝送を禁止するので、伝送レートの低すぎる伝送は回避でき、効率の良い通信が可能なシステムとなる。

【0174】また、撮影装置や特定記録装置には相手装置への伝送状況または伝送可能条件の表示手段を設けると良い。このようにすると、伝送状況や伝送可能条件が表示手段の表示情報からわかるので、使用者にとって親切であり、操作性も一段と良くなる。

【0175】さらに、記録再生部2の入出力端子14を公衆伝送網25に接続することによって、本撮影装置および記録装置からの映像信号、音声信号を家庭のビデオサーバーなどに送信する場合に、撮影日時、場所、簡単なコメントなどのデータを制御信号に含めることによって、撮影日時別、撮影場所別、コメント別などに映像音声データを効率的に蓄積することができる。

【0176】加えて、撮影対象を記録する際に、トラッキング（記録振り分け）する構成にしてもよい。このような構成にすると、トラックごとの再生、代表画像を見ながらの編集が可能になる。このトラッキングに際して、映像の変化で映像対象を自動的にトラッキングするようになると、映像の変化点を利用した編集ポイントの抽出、変化点のみの再生による概要の短時間での把握などができる。また、映像対象のトラッキングを手元の発信装置から操作できるように構成すると、撮影者の意図（重要度などでトラックを意図的に変える）を記録に反映でき、編集時の不要（重要度の低い）映像のカットなどに有効となる。また、カメラIDで映像対象を自動的にトラッキングするようになると、つまり、どのカメラからの映像だったのかというような情報によってトラッキングすると、記録された映像で、手元のカメラからのものだけを表示する場合などに有効である。

【0177】

【発明の効果】以上、詳述したように本発明によれば、撮影装置と記録装置を別体とし、両者間は無線回線により接続して撮影装置の撮像した映像を記録装置に無線で送信して記録させる方式の撮影装置及び記録装置において、記録装置に記録された映像を撮影装置側で確認したり、観賞したりすることが可能になり、また、撮影装置と記録装置が離れている場合でも、互いの操作の面で支

障がないシステムとなる他、カメラ部と記録再生部間の信号を無線伝送する撮影装置および記録装置において、使用者の周辺に存在する別のカメラからの映像、音声をも利用できるようになる撮影装置および記録装置を提供することができる。

【図面の簡単な説明】

【図1】本発明を説明するための図であって、本発明の具体例1に係る撮影装置および記録装置の構成例を示すブロック図である。

【図2】本発明を説明するための図であって、カメラ部に音声部の無い構成を説明する図である。

【図3】本発明を説明するための図であって、本発明システムで使用される無線伝送される無線信号のフォーマット構成を示す図である。

【図4】本発明を説明するための図であって、本発明システムで使用されるカメラ変復調部の構成の例を示したものである。

【図5】本発明を説明するための図であって、別のカメラからの映像、音声を利用する場合での動作を説明するブロック図である。

【図6】本発明を説明するための図であって、表示部の画面を9画面に分割した例を示したものである。

【図7】本発明を説明するための図であって、記録中の画面を全画面で表示し、別のカメラの画像を子画面で出した例を示す図である。

【図8】本発明を説明するための図であって、カメラ部にカメラ位置検出部を有するブロック図である。

【図9】本発明を説明するための図であって、無線信号にカメラ位置信号が含まれる場合の構成図である。

【図10】本発明を説明するための図であって、カメラ位置検出部を有するカメラ部による動作を説明する図である。

【図11】本発明を説明するための図であって、映像信号、音声信号を接触コネクタを介して入出力する構成を示すブロック図である。

【図12】コンテンポラリメモリがテープ媒体である構成を示すブロック図である。

* 【図13】本発明を説明するための図であって、カメラ部からの無線信号を中継器に送信し、伝送網を介して伝送する使用方法を説明する図である。

【図14】本発明を説明するための図であって、カメラ部及び記録再生部に中継部を設けて、無線信号を中継器に送信し、伝送する使用方法を説明する図である。

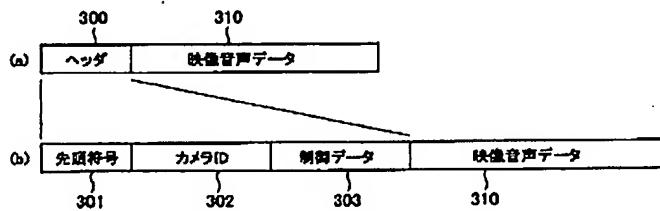
【図15】従来技術を説明するための図であって、カメラ部と記録再生部を分離した従来の撮像装置の構成を示すブロック図である。

【符号の説明】

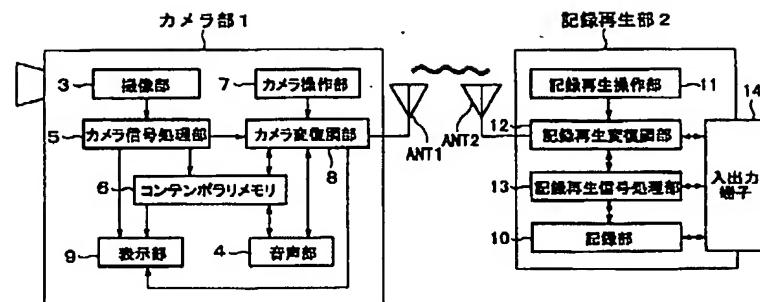
- 1…カメラ部
- 2…記録再生部
- 3…撮像部
- 4…音声部
- 5…カメラ信号処理部
- 6…コンテンポラリメモリ
- 7…カメラ操作部
- 8…カメラ変復調部
- 9…表示部
- 10…記録部
- 11…記録再生操作部
- 12…記録再生変復調部
- 13…記録再生信号処理部
- 14…入出力端子
- 15…無線受信部
- 16…誤り判定部
- 17…映像符号化部
- 18…音声符号化部
- 19…多重化部
- 20…無線送信部
- 21…別のカメラ
- 22…カメラ位置検出部
- 23…接触コネクタ
- 24…中継器
- 25…伝送網
- 26…中継部
- ANT1, ANT2…アンテナ。

*

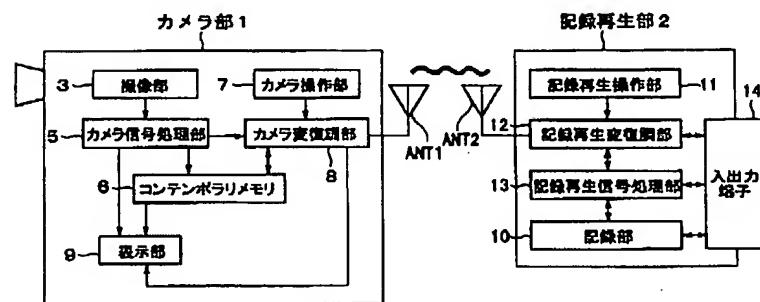
【図3】



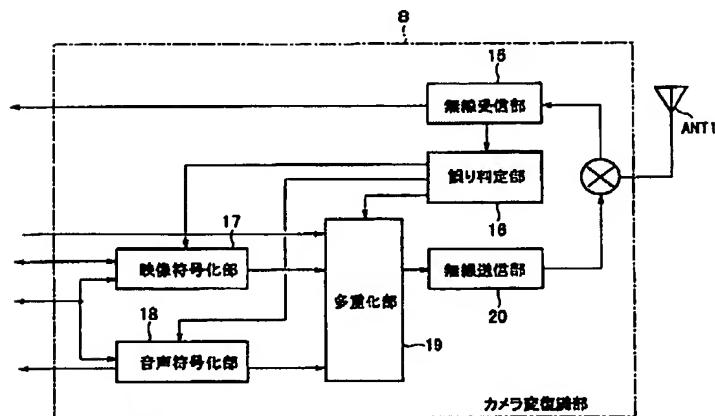
【図1】



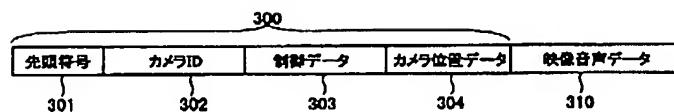
【図2】



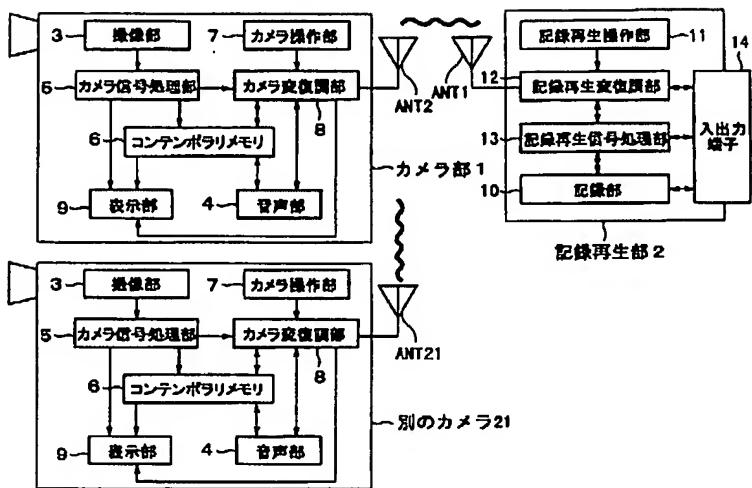
【図4】



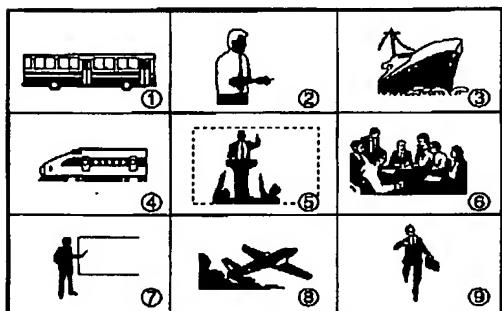
【図9】



【図5】



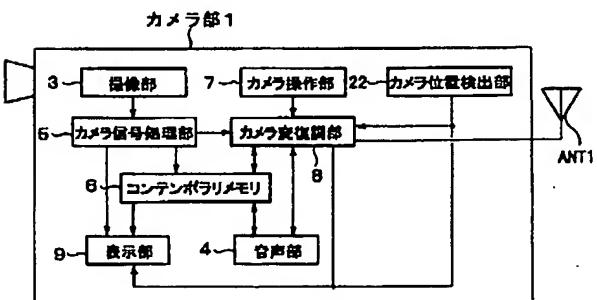
【図6】



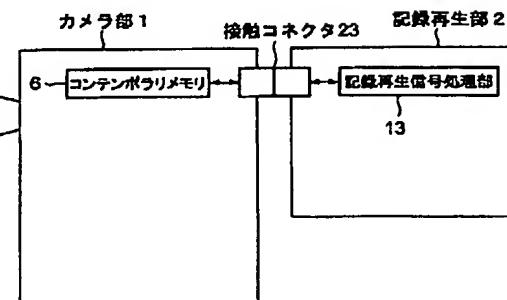
【図7】



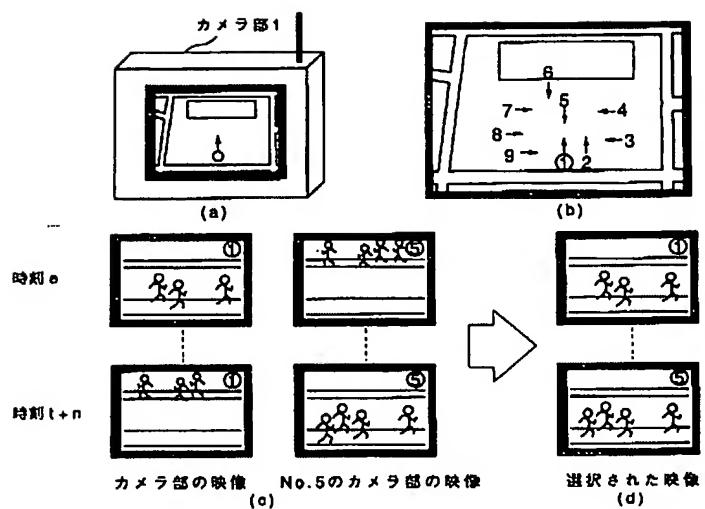
【図8】



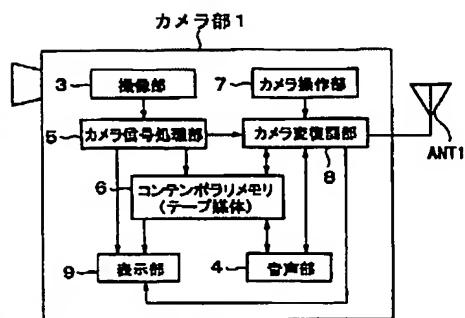
【図11】



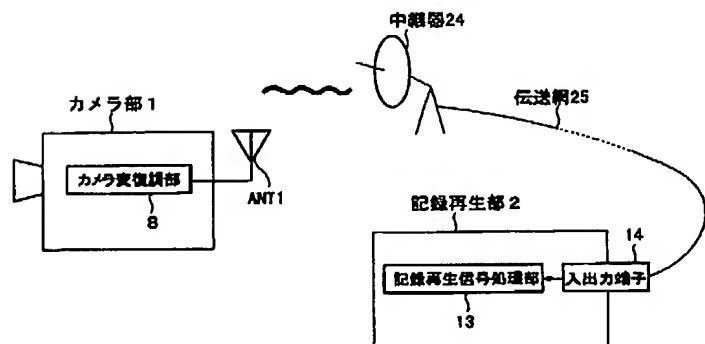
〔図10〕



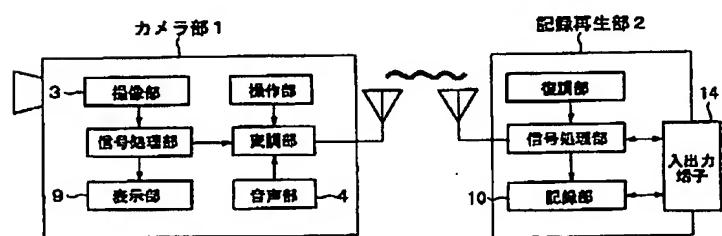
(图12)



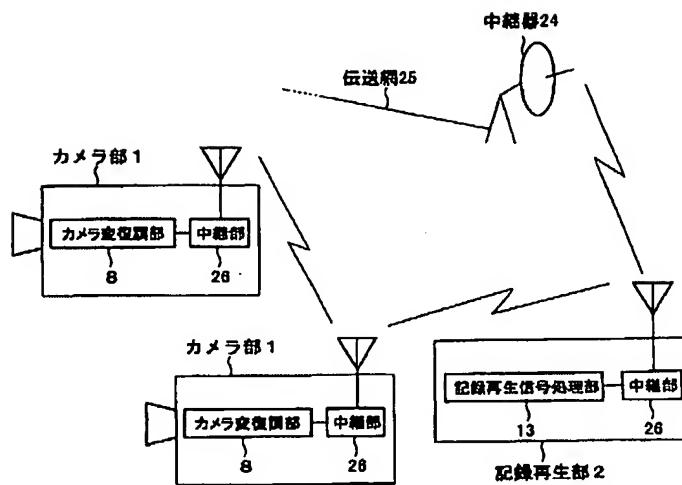
〔図13〕



〔図15〕



[図14]



フロントページの続き

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